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**Operable Unit 1
Phase IA Supplemental
Field Investigation
Data Report for the
Ventron/Velsicol Site
Wood-Ridge/Carlstadt,
New Jersey**

Prepared for

Rohm and Haas Company
Mt. Prospect, Illinois



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Acronyms and Abbreviations

bgs	below ground surface
DAF	dilution attenuation factor
EPA	U.S. Environmental Protection Agency
GWQS	New Jersey Groundwater Quality Standards
IGWSCC	New Jersey Impact to Groundwater Soil Cleanup Criteria
<i>J</i>	estimated
MCL	EPA Maximum Contaminant Level
MDL	method detection limit
NRDCSCC	New Jersey Non-Residential Direct Contact Soil Cleanup Criteria
NJDEP	New Jersey Department of Environmental Protection
OU	Operable Unit
Phase IA SFI	Phase IA supplemental field investigation
Phase IA work plan	Phase IA work plan dated September 9, 1999
QA/QC	quality assurance and quality control
RDCSCC	New Jersey Residential Direct Contact Soil Cleanup Criteria
RI	remedial investigation
RPD	relative percent difference
Site	Ventron/Velsicol Site
SSL	EPA soil screening level for migration to groundwater
SWQS	New Jersey Surface Water Quality Standards
<i>U</i>	undetected at detection limit shown

Introduction

This data report presents the results of a Phase IA supplemental field investigation (Phase IA SFI) completed as part of the Phase IA remedial investigation (RI) for the Ventron/Velsicol Site (Site) located in Wood-Ridge and Carlstadt, New Jersey. Field investigation activities were conducted at the Site in general accordance with the *Work Plan for Supplemental Groundwater Sampling and Soil Assessment*, dated May 30, 2002 (Exponent 2002). The scope of work addressed comments made by the New Jersey Department of Environmental Protection (NJDEP) in a letter dated April 18, 2002 (Zervas 2002a, pers. comm.). This work plan was approved with several changes as requested by NJDEP in a letter dated August 28, 2002 (Zervas 2002b, pers. comm.). NJDEP requested further evaluation of the occurrence of mercury in groundwater and soil at the site as follows:

- Sampling of all groundwater monitoring wells using previously approved techniques (Comment 1)
- Additional assessment of the potential presence of elemental mercury in the area of the former mercury processing facility (the area of the existing Wolf and U.S. Life Warehouse buildings) (Comment 2)
- Further delineation of mercury in soil north of the former mercury processing facility (Comment 3).

NJDEP approved analysis of additional metals in the monitoring well groundwater samples as well as soil sampling procedures for the offsite boreholes (Zervas 2002c, pers. comm.). Included with this report are tables and figures summarizing the analytical results of the field investigations, as well as laboratory analytical data reports (Appendix A), borehole logs (Appendix B), and a quality assurance review of the reported data (Appendix C). After approval of this report by NJDEP, the tables and illustrations will be incorporated into a revised version of the *Operable Unit 1 Remedial Investigation Report* for the Site, dated September 2000 (Exponent 2000).

Field Activities

Except where explicitly identified, the field procedures and analytical methods specified in the agency review draft *Phase IA Work Plan*, dated September 9, 1999 (Phase IA work plan [Exponent 1999]), or previous documents referenced therein, were adhered to during the Phase IA SFI.

Groundwater Sampling

The objective of the Phase IA SFI groundwater sampling was to provide an additional set of metals data for groundwater. Groundwater samples were collected from the 15 Site monitoring wells (MW-1 through MW-15) during September 24 to 27, 2002 (Figure 1).

Groundwater surface elevations were measured to the nearest 0.01 ft in each monitoring well before purging and sampling (Table 1). The groundwater samples were generally collected using the same procedures previously employed for groundwater collection at the Site. One modification was the use of a peristaltic pump (as specified in the May 30, 2002 supplemental work plan [Exponent 2002]) because volatilization of the groundwater samples was not a concern since the samples were analyzed for selected metals only. Samples planned for mercury analysis were collected using the "clean hands" technique to minimize potential cross-contamination. Filtered (dissolved) and unfiltered samples were collected from each of the monitoring wells. The samples were filtered in the field using a disposable, 0.45 μ m pore-size in-line filter.

Filtered (dissolved) and unfiltered samples were submitted to Cebam Analytical in Seattle, Washington, for low-level, total mercury analysis by U.S. Environmental Protection Agency (EPA) Method 1631. Unfiltered samples were submitted to Columbia Analytical Services in Rochester, New York, for analysis of total barium, copper, iron, lead, manganese, nickel, and vanadium by EPA Method 6010B. Unfiltered samples were also submitted to Severn Trent Services in Amherst, New York, for analysis of total arsenic, cadmium, and thallium by EPA Method 6020.

For quality assurance/quality control (QA/QC) purposes, one duplicate groundwater sample (filtered and unfiltered) was collected from monitoring well MW-7, and one equipment rinsate sample (filtered and unfiltered) was also collected. These samples were analyzed for the same constituents and by the same methods described above.

Copies of the analytical data reports are provided in Appendix A. The groundwater analytical results are summarized in Tables 2, 3, and 4 (with groundwater quality and surface water quality criteria comparisons).

Soil Sampling

The objectives of the soil assessment were to evaluate the potential presence of elemental mercury in shallow and subsurface soil adjacent to the warehouse buildings in the developed area of Operable Unit 1 (OU1), and to further delineate the offsite extent of mercury in soil to the north of this area (Figure 2). Eight onsite boreholes (B-1 through B-8) were drilled and sampled on October 8 and 9, 2002. Six offsite boreholes (B-9 through B-14) were drilled and sampled on October 9 and 10, 2002, and November 13, 2002 (Figure 3).

The boreholes were drilled by Summit Drilling of Bound Brook, New Jersey, using a hydraulic, direct-push drill rig. A geologist from Exponent provided oversight during drilling and logged the boreholes. All boreholes were drilled and sampled continuously through fill and native sandy soils until the top of the fine-grained unit was encountered (undifferentiated fine-grained deposits or varved silt and clay as described by Joseph S. Ward, Inc. [1974, 1975]). Soil sampling was facilitated using a 4-ft-long, stainless-steel core barrel sampler lined with a new, disposable, acetate liner for each sample collected. The boreholes were backfilled with bentonite grout and capped with asphalt patch or native soil material, as appropriate.

Soil samples collected from the boreholes were examined for lithology and the potential presence of elemental mercury. Logs of the boreholes are provided in Appendix B. The presence of elemental mercury was assessed in the field for each 2-ft sample interval by observations and hand lens examination, and by field screening using a portable Jerome® mercury vapor meter. The field screening results are provided on the borehole logs.

For onsite boreholes B-1 through B-8, soil samples were planned for laboratory analysis only if field mercury vapor concentrations exceeded 0.5 mg/m^3 . Soil with mercury vapor concentrations in excess of 0.5 mg/m^3 was detected only in borehole B-5 from 6–10 ft below ground surface (bgs); consequently, soil samples SP0001 (6–7 ft bgs), SP0002 (7–8 ft bgs), SP0003 (8–9 ft bgs), and SP0004 (9–10 ft bgs) collected from borehole B-5 were submitted for laboratory analysis.

For offsite boreholes B-9 through B-14, soil samples were collected at 2-ft intervals. The three samples collected from 0–6 ft bgs (i.e., 0–2, 2–4, and 4–6 ft intervals) were pre-selected for laboratory analysis (although some intervals were not sampled due to insufficient sample recovery). Soil samples collected below 6 ft bgs from the offsite boreholes were archived for future analysis if the total mercury concentration in the 4–6 ft sample interval exceeded 14 mg/kg , the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) for offsite soil. The next deeper sample interval was analyzed from each borehole, if needed, until the total mercury concentration was below 14 mg/kg .

For QA/QC purposes, one duplicate soil sample was collected from the 0–2 ft sample interval from borehole B-10, and one equipment rinsate sample was also collected. All selected soil samples and the duplicate sample were analyzed for total mercury by EPA Method 7471A, and the equipment rinsate sample was analyzed for total mercury by EPA Method 7470A. Copies of the analytical data reports are provided in Appendix A. The soil analytical results are summarized in Tables 5, 6, and 7, with nonresidential direct contact (NRDCSCC), impact to groundwater (IGWSCC), and offsite RDCSCC comparisons, respectively.

One deviation from the work plan was the relocation of offsite boreholes B-10 through B-14. The boreholes were moved from their proposed locations to maintain a 25-ft offset from the railroad tracks as required by the Norfolk Southern Railroad. Relocation of the boreholes was approved by NJDEP (MacGregor 2002, pers. comm.).

Results of the Field Investigation

The results of a quality assurance review of the analytical data are provided in Appendix C. Analytical data were validated in accordance with applicable guidance specified by the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (U.S. EPA 1994), the referenced method-specific quality control criteria, or in the context of the data quality objectives established for this project.

The results reported by the laboratories (Cebam Analytical, Columbia Analytical Services, and Severn Trent Services) are acceptable as reported and as qualified during the assessment of data quality. During the quality assurance review, 4 dissolved mercury results and 13 total arsenic results for groundwater were restated as undetected (*U* qualifier) due to rinsate blank contamination (the restated values were less than 5 times the concentration measured in the rinsate blank sample). Two dissolved groundwater mercury results and two soil mercury results were restated as estimated (*J* qualifier) due to low relative percent difference (RPD) between the sample and sample duplicate for both media. No results were rejected.

Groundwater Results

The monitoring well locations and historical mercury concentrations in groundwater are shown on Figure 1. Phase IA SFI groundwater surface elevations and contours are shown on Figure 3. A time series plot of historical groundwater elevations is shown on Figure 4. The Phase IA SFI groundwater analytical results are summarized in Tables 2 through 4. Table 2 presents comparison of the data to New Jersey groundwater quality standards (GWQS). Table 3 presents comparison of the data to EPA drinking water Maximum Contaminant Levels (MCLs) (as requested by NJDEP). Table 4 presents comparison of the data to New Jersey surface water quality standards (SWQS) for fresh water. Table 4 includes only the results from the Site perimeter wells. Historical groundwater levels and elevations are summarized in Table 1.

The groundwater analytical results indicated the following ranges of metals concentrations: arsenic (2.23 *U* to 41.5 $\mu\text{g/L}$), barium (20 *U* to 1,100 $\mu\text{g/L}$), cadmium (0.5 *U* to 0.841 $\mu\text{g/L}$), copper (20 *U* $\mu\text{g/L}$), iron (100 *U* to 31,700 $\mu\text{g/L}$), lead (5 *U* $\mu\text{g/L}$), manganese (10 *U* to 4,180 $\mu\text{g/L}$), dissolved mercury (0.002 *U* to 12.55 $\mu\text{g/L}$), total mercury (0.017 to 22.91 $\mu\text{g/L}$), nickel (40 *U* $\mu\text{g/L}$), thallium (0.2 *U* to 0.2973 $\mu\text{g/L}$), and vanadium (50 *U* to 62.9 $\mu\text{g/L}$).

Mercury concentrations that exceeded the GWQS (2 $\mu\text{g/L}$ for total and dissolved mercury) occurred in monitoring wells MW-7 (5.83 $\mu\text{g/L}$ total), MW-9 (3.86 $\mu\text{g/L}$ total), and MW-13 (12.55 $\mu\text{g/L}$ dissolved and 22.91 $\mu\text{g/L}$ total). Monitoring wells MW-7, MW-9, and MW-13 are located around the perimeter of the Wolf Warehouse in the developed area of the Site. Other metals concentrations that exceeded the available GWQS included arsenic in wells MW-6, MW-13, and MW-15, iron in all wells except MW-10, MW-12, and MW-14, and manganese in all wells except MW-9.

The MCL and GWQS values for mercury are equivalent; therefore, mercury concentrations that exceeded the MCL also exceeded the GWQS. The only other MCL exceeded was arsenic in wells MW-6 (12.2 $\mu\text{g/L}$), MW-13 (41.5 $\mu\text{g/L}$), and MW-15 (10.9 $\mu\text{g/L}$) (MCL 10 $\mu\text{g/L}$).

Mercury concentrations in the Site perimeter monitoring wells above the SWQS (0.144 $\mu\text{g/L}$ for total and dissolved mercury) occurred in monitoring wells MW-8 (0.192 $\mu\text{g/L}$ dissolved and 0.583 $\mu\text{g/L}$ total) and MW-15 (0.345 $\mu\text{g/L}$ total only). The only other SWQS exceeded was arsenic in wells MW-6 (12.2 $\mu\text{g/L}$) and MW-15 (10.9 $\mu\text{g/L}$). It should be noted that the restated undetected values for the other perimeter wells exceeded the arsenic SWQS. The SWQS for arsenic is 0.017 $\mu\text{g/L}$.

Soil Results

The Phase IA SFI borehole locations and soil mercury concentrations are shown on Figure 3. The soil analytical results are summarized in Tables 5 through 7. Table 5 presents comparison of the data to NRDCSCC. Table 6 presents comparison of the data to RDCSCC for offsite boreholes only. Table 7 presents a comparison of the data to the U.S. EPA SSL for a dilution attenuation factor (DAF) of 1 (as requested by NJDEP).

Elemental mercury was not observed during the Phase IA SFI. Mercury vapor concentrations in soil exceeded 0.5 mg/m^3 in only one borehole, borehole B-5 from 6–8 ft bgs (0.698 mg/m^3) and 8–10 ft bgs (0.861 mg/m^3). The borehole data indicated the fine-grained deposits were encountered at depths of approximately 10–32 ft bgs. The deposits were observed at greater depths in the general area between the two warehouse buildings, and were shallower toward the northwest and southeast sides of the buildings.

Total mercury was not detected at or above the laboratory method detection limit (MDL) in three samples (B-10 at 8–10 ft bgs, B-11 at 6–8 ft bgs, and B-13 at 2–4 ft bgs). Total mercury was detected in all other soil samples at concentrations varying from 0.04 mg/kg (B-14 at 6–8 ft bgs) to 750 mg/kg (B-5 at 6–7 ft bgs).

Only one soil mercury concentration (750 mg/kg in borehole B-5 at 6–7 ft bgs) exceeded the NRDCSCC of 270 mg/kg .

Several soil mercury concentrations in offsite boreholes B-9 through B-14 exceeded the RDCSCC of 14 mg/kg as follows: B-9 at 0–2 ft bgs (240 mg/kg), B-10 at 0–2 ft bgs (13.3 J and 31.7 J mg/kg), B-10 at 4–6 ft bgs (42.8 mg/kg), B-11 at 4–6 ft bgs (16.6 mg/kg), B-13 at 0–2 ft bgs (52.6 mg/kg), B-13 at 4–6 ft bgs (172 mg/kg), B-13 at 6–8 ft bgs (52.1 mg/kg), B-13 at 8–10 ft bgs (35.0 mg/kg), B-13 at 12–14 ft bgs (31.0 mg/kg), B-14 at 0–2 ft bgs (67.1 mg/kg), and B-14 at 4–6 ft bgs (162 mg/kg).

At all offsite borehole locations except one, mercury concentrations in the deepest interval analyzed were below the RDCSCC of 14 mg/kg . At borehole B-13, the deepest two intervals were analyzed simultaneously to meet the laboratory holding time deadline. While the second deepest interval (10–12 ft bgs) had a mercury concentration of 0.75 mg/kg (below the RDCSCC), the mercury concentration in the deepest interval (31.0 mg/kg at 12–14 ft bgs)

exceeded the RDCSCC. Deeper intervals were not analyzed because the holding time was exceeded.

Soil mercury concentrations in 20 of the 26 samples analyzed exceeded the SSL of 0.1 mg/kg in boreholes as follows: B-5 at 6–7 ft bgs (750 mg/kg), 7–8 ft bgs (128 mg/kg), 8–9 ft bgs (252 mg/kg), and 9–10 ft bgs (12.3 mg/kg); B-9 at 0–2 ft bgs (240 mg/kg) and 2–4 ft bgs (0.21 mg/kg); B-10 at 0–2 ft bgs (13.3 *J* and 31.7 *J* mg/kg) and 4–6 ft bgs (42.8 mg/kg); B-11 at 0–2 ft bgs (2.8 mg/kg) and 4–6 ft bgs (16.6 mg/kg); B-12 at 0–2 ft bgs (0.33 mg/kg); B-13 at 0–2 ft bgs (52.6 mg/kg), 4–6 ft bgs (172 mg/kg), 6–8 ft bgs (52.1 mg/kg), 8–10 ft bgs (35.0 mg/kg), 10–12 ft bgs (0.75 mg/kg), and 12–14 ft bgs (31.0 mg/kg); and B-14 at 0–2 ft bgs (67.1 mg/kg) and 4–6 ft bgs (162 mg/kg).

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LEGEND

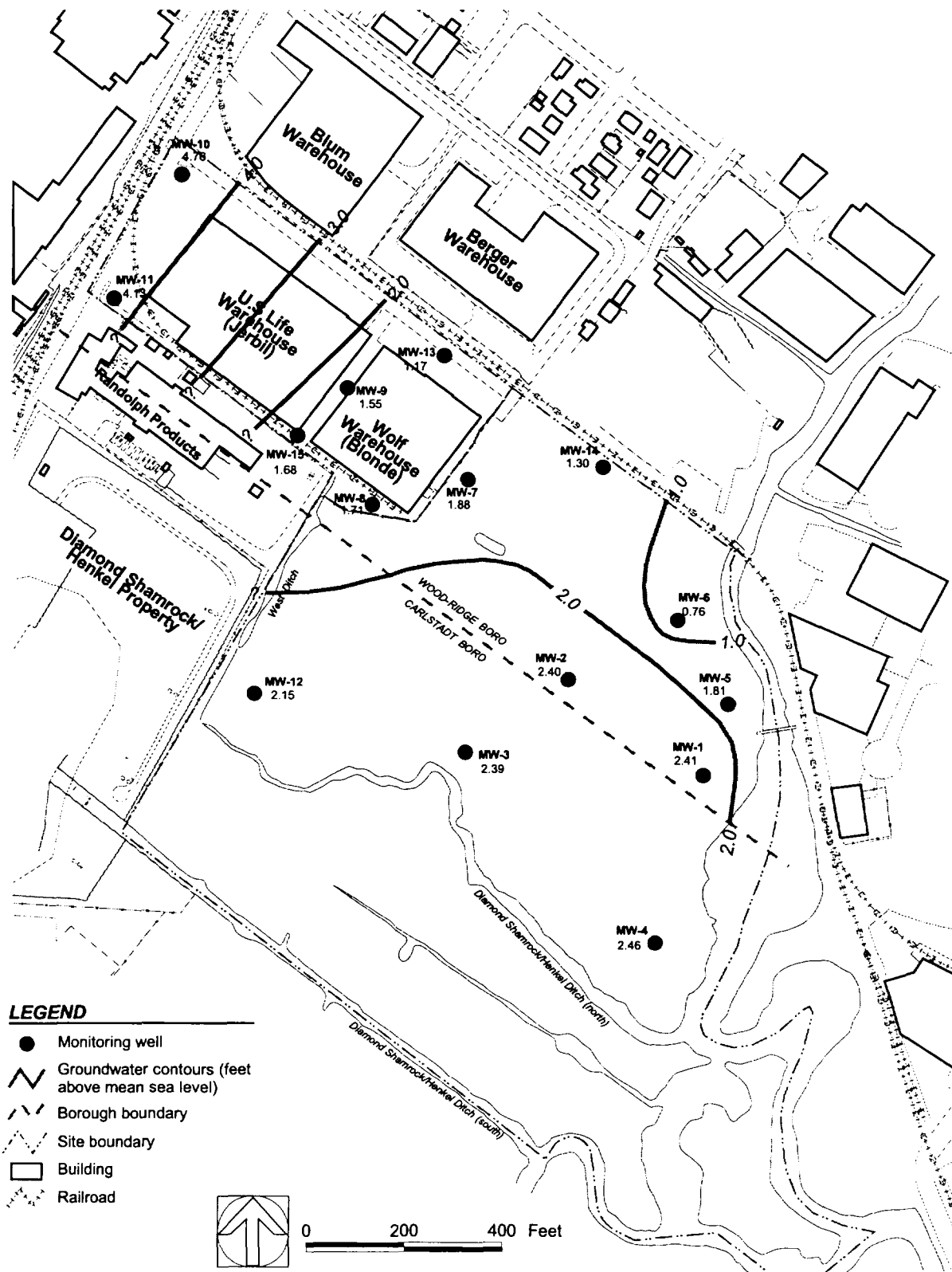
- ⊕ Monitoring well
 - Phase IA SFI (2002) (filtered/unfiltered)
 - Phase IA (2000) (filtered/unfiltered)
 - Phase IA (1999) (unfiltered)
 - Phase I (1997) (unfiltered)
 - NJDEP (1990) (filtered/unfiltered)
- - - Borough boundary
- - - Site boundary
- ▭ Building
- J - Estimated
- U - Undetected
- NA - Not analyzed
- * - Average concentration of sample and sample duplicate



0 250 500 Feet

Source map survey by: James Stewart, Inc.

Figure 1. Mercury concentrations ($\mu\text{g/L}$) in groundwater



Source map survey by: James M. Stewart, Inc.

Figure 2. Groundwater surface elevations September 24, 2002

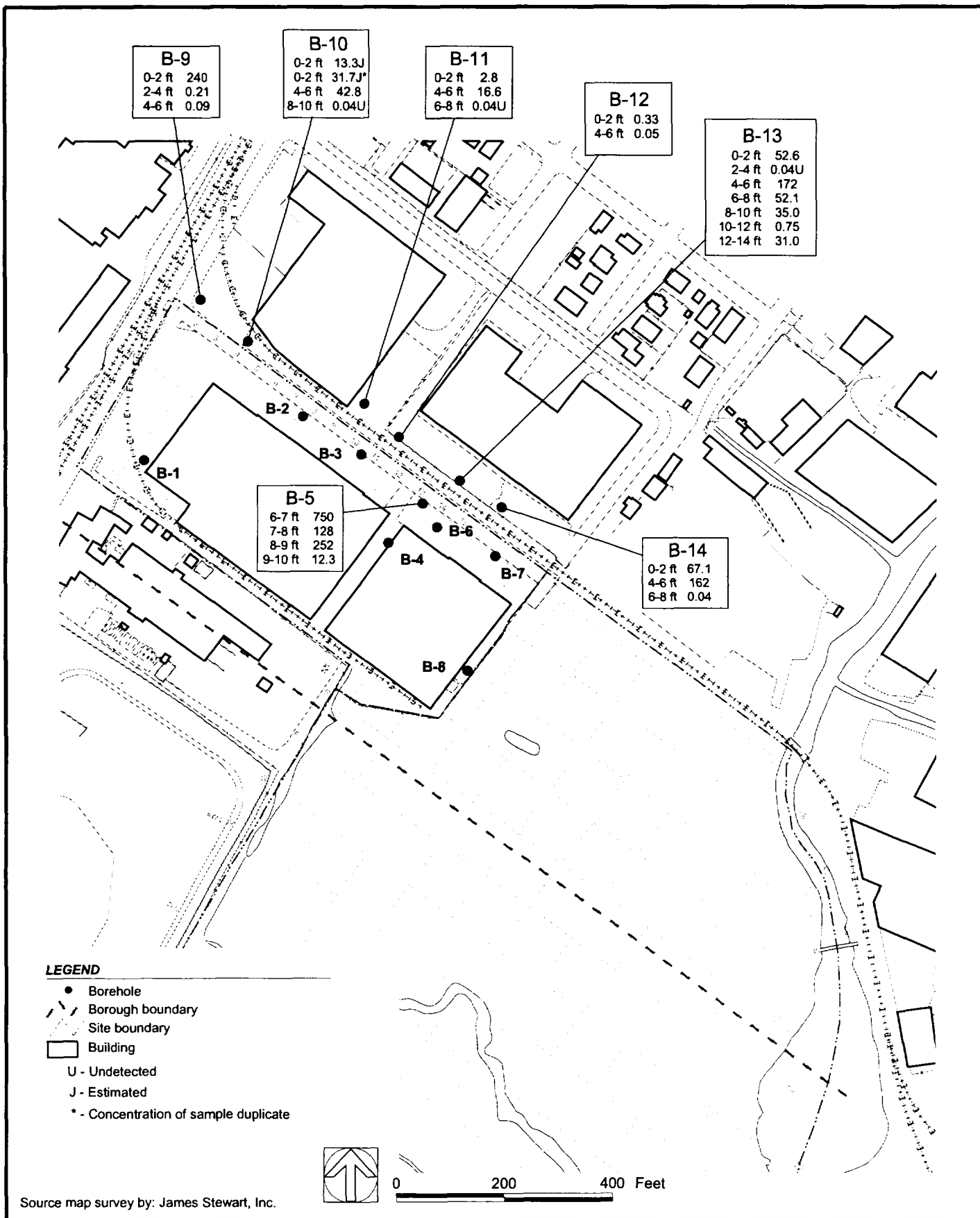


Figure 3. Borehole locations and mercury concentrations (mg/kg) in soil

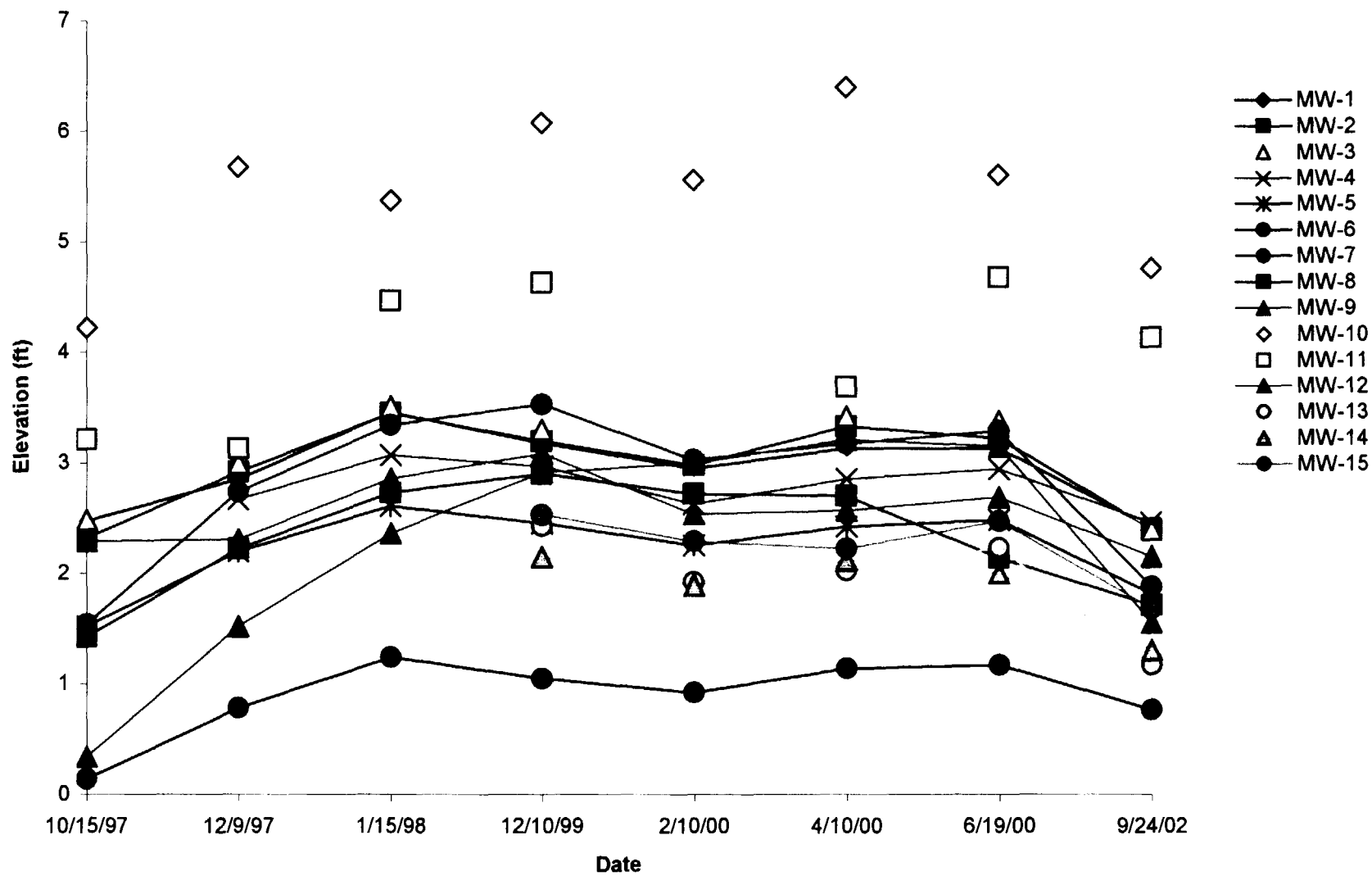


Figure 4. Groundwater surface elevation measurements, time series for each well

Table 1. Summary of groundwater elevation measurements

Monitoring Well	Ground Elevation	Elevation of Measuring Point	October 15, 1997		December 9, 1997		January 15, 1998	
			Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
MW-1	8.68	11.36	8.89	2.47	8.51	2.85	7.90	3.46
MW-1A	NA	9.15	6.53	2.62	6.44	2.71	NA	NA
MW-2	10.30	12.94	10.62	2.32	10.02	2.92	9.49	3.45
MW-3	9.55	12.32	9.84	2.48	9.32	3.00	8.81	3.51
MW-4	7.90	9.89	NA	NA	7.22	2.67	6.82	3.07
MW-4A	NA	11.55	8.72	2.83	9.09	2.46	NA	NA
MW-5	8.86	10.70	9.18	1.52	8.50	2.20	8.09	2.61
MW-6	9.57	12.12	11.98	0.14	11.34	0.78	10.88	1.24
MW-7	5.35	7.19	5.65	1.54	4.45	2.74	3.85	3.34
MW-8	5.36	8.10	6.68	1.42	5.88	2.22	5.37	2.73
MW-9	4.02	6.60	6.26	0.34	5.08	1.52	4.24	2.36
MW-10	6.76	6.52	2.30	4.22	0.84	5.68	1.14	5.38
MW-11	5.06	4.83	1.62	3.21	1.70	3.13	0.36	4.47
MW-12	5.80	7.73	5.44	2.29	5.42	2.31	4.87	2.86
MW-12A		7.56	5.51	2.05	7.18	.38	NA	NA
MW-14								
MW-15								
Upstream ^a		9.13	NA	NA	10.60	- 1.47	10.77	- 1.64
Downstream ^b		9.13	NA	NA	7.58	1.55	7.56	1.57

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Table 1. (cont.)

Monitoring Well	Ground Elevation	Elevation of Measuring Point	December 10, 1999		February 10, 2000		April 10, 2000	
			Depth to Water ^c	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
MW-1	8.68	11.36	8.18	3.18	8.41	2.95	8.23	3.13
MW-1A								
MW-2	10.30	12.94	9.74	3.20	9.96	2.98	9.61	3.33
MW-3	9.55	12.32	9.02	3.30	9.29	3.03	8.90	3.42
MW-4	7.90	9.89	6.92	2.97	7.26	2.63	7.04	2.85
MW-4A								
MW-5	8.86	10.70	8.25	2.45	8.45	2.25	8.28	2.42
MW-6	9.57	12.12	11.07	1.05	11.20	0.92	10.98	1.14
MW-7	5.35	7.19	3.66	3.53	4.16	3.03	4.02	3.17
MW-8	5.36	8.10	5.20	2.90	5.38	2.72	5.40	2.70
MW-9	4.02	6.60	3.69	2.91	3.60	3.00	3.39	3.21
MW-10	6.76	6.52	0.44	6.08	0.96	5.56	0.12	6.40
MW-11	5.06	4.83	0.20	4.63	NA	NA	1.14	3.69
MW-12	5.80	7.73	4.65	3.08	5.19	2.54	5.16	2.57
MW-12A	4.46	4.07	1.64	2.43	2.15	1.92	2.05	2.02
MW-14	5.64	7.45	5.30	2.15	5.56	1.89	5.33	2.12
MW-15	4.20	4.58	2.05	2.53	2.29	2.29	2.36	2.22
Upstream ^a								
Downstream ^b								

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Table 1. (cont.)

Monitoring Well	Ground Elevation	Elevation of Measuring Point	June 19, 2000		September 24, 2002	
			Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
MW-1	8.68	11.36	8.23	3.13	8.95	2.41
MW-1A						
MW-2	10.30	12.94	9.72	3.22	10.54	2.40
MW-3	9.55	12.32	8.94	3.38	9.93	2.39
MW-4	7.90	9.89	6.95	2.94	7.43	2.46
MW-4A						
MW-5	8.86	10.70	8.22	2.48	8.89	1.81
MW-6	9.57	12.12	10.95	1.17	11.36	0.76
MW-7	5.35	7.19	3.90	3.29	5.31	1.88
MW-8	5.36	8.10	5.96	2.14	6.39	1.71
MW-9	4.02	6.60	3.45	3.15	5.05	1.55
MW-10	6.76	6.52	0.91	5.61	1.76	4.76
MW-11	5.06	4.83	0.15	4.68	0.70	4.13
MW-12	5.80	7.73	5.04	2.69	5.58	2.15
MW-12A	4.46	4.07	1.84	2.23	2.90	1.17
MW-14	5.64	7.45	5.45	2.00	6.15	1.30
MW-15	4.20	4.58	2.11	2.47	2.90	1.68
Upstream ^a						
Downstream ^b						

Notes: All elevations in feet above mean sea level
 Depth to water measurements in feet
 MW-15 was converted to a flush mount type completion on 12/10/99
 MW-11 was saturated with snow melt water on 2/10/00
 NA - not accessible for measurement

^a Surface water measuring point upstream of tide gate on Berry's Creek.

^b Surface water measuring point downstream of tide gate on Berry's Creek.

^c Post-sampling measurements.

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Table 2. Phase IA SFI groundwater analytical results with GWQS comparisons

Analyte	Units	Sample Location and Date of Sample Collection								
		NJ	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7 (dup)
		GWQS	GW0302	GW0304	GW0306	GW0305	GW0303	GW0310	GW0311	GW0312
			9/24/2002	9/25/2002	9/25/2002	9/25/2002	9/25/2002	9/26/2002	9/26/2002	9/26/2002
Metals										
Arsenic	µg/L	8	3.21 U	6.67 U	2.52 U	2.82 U	3.01 U	12.2	3.55 U	3.33 U
Barium	µg/L	2,000	493	1,100	150	592	670	194	363	372
Cadmium	µg/L	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.831	0.851
Copper	µg/L	1,000	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Iron	µg/L	300	18,100	17,300	15,800	19,400	20,700	17,300	27,100	27,600
Lead	µg/L	10	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	µg/L	50	838	1,200	2,820	1,050	1,040	3,730	861	889
Mercury (dissolved, filtered)	µg/L	2	0.002 U	0.031	0.010	0.003 U	0.029	0.006 U	1.06 J	0.637 J
Mercury (total, unfiltered)	µg/L	2	0.024	0.051	0.070	0.022	0.074	0.069	6.16	5.49
Nickel	µg/L	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Thallium	µg/L	10	0.2 U	0.2973	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	µg/L	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U

825840021

Table 2. (cont.)

		Sample Location and Date of Sample Collection								
		NJ	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
			GW0313	GW0316	GW0315	GW0301	GW0307	GW0314	GW0309	GW0317
Analyte	Units	GWQS	9/26/2002	9/27/2002	9/27/2002	9/24/2002	9/25/2002	9/26/2002	9/26/2002	9/27/2002
Metals										
Arsenic	μg/L	8	4.89 U	2.83 U	2.9 U	2.23 U	3.25 U	41.5	4.42 U	10.9
Barium	μg/L	2,000	395	20 U	471	315	90.3	338	300	75.4
Cadmium	μg/L	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Copper	μg/L	1,000	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Iron	μg/L	300	31,700	387	122	7,630	100	2,350	100 U	5,110
Lead	μg/L	10	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	μg/L	50	4,180	10 U	366	681	182	1,380	3,690	1,500
Mercury (dissolved, filtered)	μg/L	2	0.192	0.842	0.130	0.002 U	0.027	12.55	0.033	0.055
Mercury (total, unfiltered)	μg/L	2	0.583	3.86	0.406	0.017	0.049	22.91	0.035	0.345
Nickel	μg/L	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Thallium	μg/L	10	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	μg/L	--	50 U	50 U	50 U	62.9	50 U	50 U	50 U	50 U

Note: -- - no criterion for this analyte
 U - indicates that the compound was analyzed for but not detected
 J - indicates an estimated concentration
 dup - duplicate sample
 GWQS - Groundwater Quality Standards (NJAC 7:9-6; January 1993)
 SFI - supplemental field investigation

Boxed entries indicate measurements at or above the criteria value.

825840022

Table 3. Phase IA SFI groundwater analytical results with MCL comparisons

Analyte	Units	MCL	Sample Location and Date of Sample Collection							
			MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-7 (dup)
			GW0302	GW0304	GW0306	GW0305	GW0303	GW0310	GW0311	GW0312
			9/24/2002	9/25/2002	9/25/2002	9/25/2002	9/25/2002	9/26/2002	9/26/2002	9/26/2002
Metals										
Arsenic	µg/L	10	3.21 U	6.67 U	2.52 U	2.82 U	3.01 U	12.2	3.55 U	3.33 U
Barium	µg/L	2,000	493	1,100	150	592	670	194	363	372
Cadmium	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.831	0.851
Copper	µg/L	1,300	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Iron	µg/L	--	18,100	17,300	15,800	19,400	20,700	17,300	27,100	27,600
Lead	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	µg/L	--	838	1,200	2,820	1,050	1,040	3,730	861	889
Mercury (dissolved, filtered)	µg/L	2	0.002 U	0.031	0.010	0.003 U	0.029	0.006 U	1.06 J	0.637 J
Mercury (total, unfiltered)	µg/L	2	0.024	0.051	0.070	0.022	0.074	0.069	6.16	5.49
Nickel	µg/L	--	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Thallium	µg/L	2	0.2 U	0.2973	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	µg/L	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U

825840023

Table 3. (cont.)

			Sample Location and Date of Sample Collection							
			MW-8 GW0313 9/26/2002	MW-9 GW0316 9/27/2002	MW-10 GW0315 9/27/2002	MW-11 GW0301 9/24/2002	MW-12 GW0307 9/25/2002	MW-13 GW0314 9/26/2002	MW-14 GW0309 9/26/2002	MW-15 GW0317 9/27/2002
Analyte	Units	MCL								
Metals										
Arsenic	μ g/L	10	4.89 U	2.83 U	2.9 U	2.23 U	3.25 U	41.5	4.42 U	10.9
Barium	μ g/L	2,000	395	20 U	471	315	90.3	338	300	75.4
Cadmium	μ g/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Copper	μ g/L	1,300	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Iron	μ g/L	--	31,700	387	122	7,630	100	2,350	100 U	5,110
Lead	μ g/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	μ g/L	--	4,180	10 U	366	681	182	1,380	3,690	1,500
Mercury (dissolved, filtered)	μ g/L	2	0.192	0.842	0.130	0.002 U	0.027	12.55	0.033	0.055
Mercury (total, unfiltered)	μ g/L	2	0.583	3.86	0.406	0.017	0.049	22.91	0.035	0.345
Nickel	μ g/L	--	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Thallium	μ g/L	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	μ g/L	--	50 U	50 U	50 U	62.9	50 U	50 U	50 U	50 U

Note: -- - no criterion for this analyte
U - indicates that the compound was analyzed for but not detected
J - indicates an estimated concentration
dup - duplicate sample
MCL - U.S. Environmental Protection Agency drinking water standard maximum contaminant level
SFI - supplemental field investigation

Boxed entries indicate measurements at or above the criteria value.

825840024

Table 4. Phase IA SFI groundwater analytical results for perimeter wells with SWQS comparisons

		Sample Location and Date of Sample Collection								
		NJ	MW-1	MW-3	MW-4	MW-5	MW-6	MW-8	MW-12	MW-15
			GW0302	GW0306	GW0305	GW0303	GW0310	GW0313	GW0307	GW0317
Analyte	Units	SWQS	9/24/2002	9/25/2002	9/25/2002	9/25/2002	9/26/2002	9/26/2002	9/25/2002	9/27/2002
Metals										
Arsenic	µg/L	0.017	3.21 U	2.52 U	2.82 U	3.01 U	12.2	4.89 U	3.25 U	10.9
Barium	µg/L	2,000	493	150	592	670	194	395	90.3	75.4
Cadmium	µg/L	10	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Copper	µg/L	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Iron	µg/L	--	18,100	15,800	19,400	20,700	17,300	31,700	100	5,110
Lead	µg/L	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese	µg/L	--	838	2,820	1,050	1,040	3,730	4,180	182	1,500
Mercury (dissolved, filtered)	µg/L	0.144	0.002 U	0.010	0.003 U	0.029	0.006 U	0.192	0.027	0.055
Mercury (total, unfiltered)	µg/L	0.144	0.024	0.070	0.022	0.074	0.069	0.583	0.049	0.345
Nickel	µg/L	516	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Thallium	µg/L	1.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vanadium	µg/L	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U

Note: -- - no criterion for this analyte
U - indicates that the compound was analyzed for but not detected
J - indicates an estimated concentration
dup - duplicate sample
SFI - supplemental field investigation
SWQS - New Jersey Surface Water Quality Standards for freshwater (NJAC 7:9B; January 1997)

Boxed entries indicate measurements at or above the criteria value.

Shaded entries indicate detection limits at or above the criteria value.

825840025

Table 5. Phase IA SFI borehole soil analytical results with NRDCSCC comparisons

Analyte	Units (dry wt.)	NJ NRDCSCC	Sample Location and Date of Sample Collection								
			B-5 SP0001	B-5 SP0002	B-5 SP0003	B-5 SP0004	B-9 SP0005	B-9 SP0006	B-9 SP0007	B-10 SP0013	B-10 (dup) SP0014
			10/08/02 6 - 7 ft	10/08/02 7 - 8 ft	10/08/02 8 - 9 ft	10/09/02 9 - 10 ft	10/09/02 0 - 2 ft	10/09/02 2 - 4 ft	10/09/02 4 - 6 ft	10/09/02 0 - 2 ft	10/09/02 0 - 2 ft
Conventional parameters											
Total solids	%	--	79.9	83.0	86.9	80.3	77.8	85.2	80.7	85.4	87.7
Metals											
Arsenic	mg/kg	20									
Barium	mg/kg	40,100									
Cadmium	mg/kg	100									
Chromium	mg/kg	--									
Copper	mg/kg	600									
Iron	mg/kg	--									
Lead	mg/kg	600									
Manganese	mg/kg	--									
Mercury (total)	mg/kg	270	750	128	252	12.3	240	0.21	0.09	13.3 J	31.7 J
Nickel	mg/kg	2,400									
Selenium	mg/kg	3,100									
Silver	mg/kg	4,100									
Thallium	mg/kg	2									
Zinc	mg/kg	1,500									
Volatile organic compounds											
Benzene	µg/kg	13,000									
Chlorobenzene	µg/kg	680,000									
meta & para Xylenes	µg/kg	1,000,000									
ortho-Xylene	µg/kg	1,000,000									
Toluene	µg/kg	1,000,000									

825840026

Table 5. (cont.)

Analyte	Units (dry wt.)	NJ NRDCSCC	Sample Location and Date of Sample Collection									
			B-10	B-10	B-11	B-11	B-11	B-12	B-12	B-13	B-13	B-13
			SP0015	SP0016	SP0018	SP0019	SP0020	SP0023	SP0024	SP0038	SP0039	SP0040
			10/09/02	10/09/02	10/10/02	10/10/02	10/10/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02
			4 - 6 ft	8 - 10 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft
Conventional parameters												
Total solids	%	--	73.1	84.7	88.5	79.0	81.1	87.1	81.0	87.5	84.4	76.7
Metals												
Arsenic	mg/kg	20										
Barium	mg/kg	40,100										
Cadmium	mg/kg	100										
Chromium	mg/kg	--										
Copper	mg/kg	600										
Iron	mg/kg	--										
Lead	mg/kg	600										
Manganese	mg/kg	--										
Mercury (total)	mg/kg	270	42.8	0.04 U	2.8	16.6	0.04 U	0.33	0.05	52.6	0.04 U	172
Nickel	mg/kg	2,400										
Selenium	mg/kg	3,100										
Silver	mg/kg	4,100										
Thallium	mg/kg	2										
Zinc	mg/kg	1,500										
Volatile organic compounds												
Benzene	µ g/kg	13,000										
Chlorobenzene	µ g/kg	680,000										
meta & para Xylenes	µ g/kg	1,000,000										
ortho-Xylene	µ g/kg	1,000,000										
Toluene	µ g/kg	1,000,000										

825840027

Table 5. (cont.)

			Sample Location and Date of Sample Collection						
			B-13	B-13	B-13	B-13	B-14	B-14	B-14
			SP0041	SP0042	SP0043	SP0044	SP0054	SP0055	SP0056
			11/13/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02
Analyte	Units (dry wt.)	NJ NRDCSCC	6 - 8 ft	8 -10 ft	10 - 12 ft	12 - 14 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft
Conventional parameters									
Total solids	%	--	78.4	78.9	83.9	83.4	79.1	82.6	80.3
Metals									
Arsenic	mg/kg	20							
Barium	mg/kg	40,100							
Cadmium	mg/kg	100							
Chromium	mg/kg	--							
Copper	mg/kg	600							
Iron	mg/kg	--							
Lead	mg/kg	600							
Manganese	mg/kg	--							
Mercury (total)	mg/kg	270	52.1	35.0	0.75	31.0	67.1	162	0.04
Nickel	mg/kg	2,400							
Selenium	mg/kg	3,100							
Silver	mg/kg	4,100							
Thallium	mg/kg	2							
Zinc	mg/kg	1,500							
Volatile organic compounds									
Benzene	μ g/kg	13,000							
Chlorobenzene	μ g/kg	680,000							
meta & para Xylenes	μ g/kg	1,000,000							
ortho-Xylene	μ g/kg	1,000,000							
Toluene	μ g/kg	1,000,000							

Notes:

- - no criterion for this analyte
- U - indicates that the compound was analyzed for but not detected
- J - indicates an estimated concentration
- dup - duplicate sample
- NRDCSCC - Non-Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26; May 1999)
- SFI - supplemental field investigation

Boxed entries indicate measurements at or above the criteria value.

825840028

Table 6. Phase IA SFI offsite borehole soil analytical results with RDCSCC comparisons

			Sample Location and Date of Sample Collection								
Analyte	Units (dry wt.)	NJ RDCSCC	B-9	B-9	B-9	B-10	B-10 (dup)	B-10	B-10	B-11	B-11
			SP0005	SP0006	SP0007	SP0013	SP0014	SP0015	SP0016	SP0018	SP0019
			10/09/02	10/09/02	10/09/02	10/09/02	10/09/02	10/09/02	10/09/02	10/10/02	10/10/02
			0 - 2 ft	2 - 4 ft	4 - 6 ft	0 - 2 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft	0 - 2 ft	4 - 6 ft
Conventional parameters											
Total solids	%	--	77.8	85.2	80.7	85.4	87.7	73.1	84.7	88.5	79.0
Metals											
Mercury (total)	mg/kg	14	240	0.21	0.09	13.3 J	31.7 J	42.8	0.04 U	2.8	16.6

825840029

Table 6. (cont.)

Analyte	Units (dry wt.)	NJ RDCSCC	Sample Location and Date of Sample Collection								
			B-11	B-12	B-12	B-13	B-13	B-13	B-13	B-13	B-13
			SP0020	SP0023	SP0024	SP0038	SP0039	SP0040	SP0041	SP0042	SP0043
			10/10/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02	11/13/02
			6 - 8 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft	6 - 8 ft	8 - 10 ft	10 - 12 ft
Conventional parameters											
Total solids	%	--	81.1	87.1	81.0	87.5	84.4	76.7	78.4	78.9	83.9
Metals											
Mercury (total)	mg/kg	14	0.04 U	0.33	0.05	52.6	0.04 U	172	52.1	35.0	0.75

825840030

Table 6. (cont.)

			Sample Location and Date of Sample Collection			
			B-13	B-14	B-14	B-14
			SP0044	SP0054	SP0055	SP0056
			11/13/02	11/13/02	11/13/02	11/13/02
Analyte	Units (dry wt.)	NJ RDCSCC	12 - 14 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft
Conventional parameters						
Total solids	%	--	83.4	79.1	82.6	80.3
Metals						
Mercury (total)	mg/kg	14	31.0	67.1	162	0.04

Notes:

- - no criterion for this analyte
- U - indicates that the compound was analyzed for but not detected
- J - indicates an estimated concentration
- dup - duplicate sample
- RDCSCC - Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26; May 1999)
- SFI - supplemental field investigation

Boxed entries indicate measurements at or above the criteria value.

825840031

Table 7. Phase IA SFI borehole soil analytical results with SSL comparisons

Analyte	Units (dry wt.)	SSL	Sample Location and Date of Sample Collection								B-10 (dup) SP0014 10/09/02 0 - 2 ft
			B-5 SP0001 10/08/02 6 - 7 ft	B-5 SP0002 10/08/02 7 - 8 ft	B-5 SP0003 10/08/02 8 - 9 ft	B-5 SP0004 10/09/02 9 - 10 ft	B-9 SP0005 10/09/02 0 - 2 ft	B-9 SP0006 10/09/02 2 - 4 ft	B-9 SP0007 10/09/02 4 - 6 ft	B-10 SP0013 10/09/02 0 - 2 ft	
Conventional parameters											
Total solids	%	--	79.9	83.0	86.9	80.3	77.8	85.2	80.7	85.4	87.7
Metals											
Arsenic	mg/kg	1									
Barium	mg/kg	82									
Cadmium	mg/kg	0.4									
Chromium	mg/kg	2									
Copper	mg/kg	--									
Iron	mg/kg	--									
Lead	mg/kg	400									
Manganese	mg/kg	--									
Mercury (total)	mg/kg	0.1	750	128	252	12.3	240	0.21	0.09	13.3	31.7
Nickel	mg/kg	7									
Selenium	mg/kg	0.3									
Silver	mg/kg	2									
Thallium	mg/kg	0.04									
Zinc	mg/kg	620									

825840032

Table 7. (cont.)

			Sample Location and Date of Sample Collection								
			B-10	B-10	B-11	B-11	B-11	B-12	B-12	B-13	B-13
			SP0015	SP0016	SP0018	SP0019	SP0020	SP0023	SP0024	SP0038	SP0039
	Units		10/09/02	10/09/02	10/10/02	10/10/02	10/10/02	11/13/02	11/13/02	11/13/02	11/13/02
Analyte	(dry wt.)	SSL	4 - 6 ft	8 - 10 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	2 - 4 ft
Conventional parameters											
Total solids	%	--	73.1	84.7	88.5	79.0	81.1	87.1	81.0	87.5	84.4
Metals											
Arsenic	mg/kg	1									
Barium	mg/kg	82									
Cadmium	mg/kg	0.4									
Chromium	mg/kg	2									
Copper	mg/kg	--									
Iron	mg/kg	--									
Lead	mg/kg	400									
Manganese	mg/kg	--									
Mercury (total)	mg/kg	0.1	42.8	0.04 U 2.8	16.6	0.04 U 0.33	0.05	52.6	0.04 U		
Nickel	mg/kg	7									
Selenium	mg/kg	0.3									
Silver	mg/kg	2									
Thallium	mg/kg	0.04									
Zinc	mg/kg	620									

825840033

Table 7. (cont.)

			Sample Location and Date of Sample Collection							
			B-13 SP0040 11/13/02	B-13 SP0041 11/13/02	B-13 SP0042 11/13/02	B-13 SP0043 11/13/02	B-13 SP0044 11/13/02	B-14 SP0054 11/13/02	B-14 SP0055 11/13/02	B-14 SP0056 11/13/02
Analyte	Units (dry wt.)	SSL	4 - 6 ft	6 - 8 ft	8 -10 ft	10 - 12 ft	12 - 14 ft	0 - 2 ft	4 - 6 ft	6 - 8 ft
Conventional parameters										
Total solids	%	--	76.7	78.4	78.9	83.9	83.4	79.1	82.6	80.3
Metals										
Arsenic	mg/kg	1								
Barium	mg/kg	82								
Cadmium	mg/kg	0.4								
Chromium	mg/kg	2								
Copper	mg/kg	--								
Iron	mg/kg	--								
Lead	mg/kg	400								
Manganese	mg/kg	--								
Mercury (total)	mg/kg	0.1	172	52.1	35.0	0.75	31.0	67.1	162	0.04
Nickel	mg/kg	7								
Selenium	mg/kg	0.3								
Silver	mg/kg	2								
Thallium	mg/kg	0.04								
Zinc	mg/kg	620								

Notes:

- - no criterion for this analyte
- U - indicates that the compound was analyzed for but not detected
- J - indicates an estimated concentration
- dup - duplicate sample
- SFI - supplemental field investigation
- SSL - soil screening level for migration to groundwater with dilution attenuation factor of 1 (U.S. EPA 1996)

Boxed entries indicate measurements at or above the criteria value.

Shaded entries indicate detection limits at or above the critia value.

825840034

Appendix A

Laboratory Analytical Data

825840035



CEBAM ANALYTICAL, INC.

RESEARCH AND TESTING CHEMISTS

3927 Aurora Ave. N. (206) 632-9097

Seattle, WA 98103 Fax: (206) 632-1947

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OCT 11 2002

October 2, 2002

Mr. David Lamadrid
Exponent, Inc.
4000 Kruse Way Place, Bldg 2, Suite 285
Lake Oswego, OR 98035

Dear Dr. Henry:

Re: Exponent Exp-02-02 Analytical Report

Enclosed please find the Exponent Exp-02-02 Analytical Report for analysis of 34 water samples received on September 26 and 28, 2002.

Please pay attention to analytical problems described in the case narrative. For future projects, if you could estimate concentration ranges to be similar to this project, please advise us so that we can pre-analyze samples using a less sensitive method prior to analysis using EPA 1631. This would be a great help to prevent the system from contamination and get samples analyzed at optimal range of EPA 1631.

If you have any questions, please contact me.

Thank you for your projects.

Sincerely,

Lian Liang, Ph.D.
Senior Research Scientist

Enclosures:

Case narrative

Table of results

Analytical sheet

Analyzer computer printouts

COC forms

825840036

Analysis of Water Samples for Total Mercury (THg) by EPA 1631

A case narrative for Exp-02-02 Report
Project: Wood-Ridge / 8600B3N.005
Lian Liang, Cebam Analytical, October 2, 2002

1. Description and processing of samples

Thirty four water samples were received in two batches in good conditions on September 26 and 28, 2002. The inside temperature of coolers was below 2C. Samples were prepared at the same day of sample receipt, and analyzed on September 30 and October 1, 2002. Results were reported on October 2, 2002.

Most of samples contain a lot of yellow, or orange precipitate as received.

2. Sample preparation and analysis

Samples were prepared by adding BrCl directly into sample bottles. After adding BrCl, precipitate was dissolved, while formation of a lot of gas bubbles was observed. Samples were allowed to stay at room temperature for 2 days for digestion, and shaken periodically to free gas bubbles.

The digestates were analyzed by EPA 1631, oxidation, SnCl₂ reduction, purge, trap, and CVAFS detection.

3. QA measurements:

WS-68 PE water sample was used for QA purpose.

Matrix spike (MS), and duplicate samples were prepared and analyzed for monitoring the accuracy and precision according to EPA 1631. In addition, ongoing precision samples, lowest standard (50 pg), bubbler blanks were prepared and analyzed as requested by EPA method 1631 for analysis of THg.

4. Acceptance of results

All results of QC measurements were acceptable.

5. Contamination

Method blank was found to be lower than method detection limit, indicating no significant contamination was made during analyses.

6. Analytical problems

Some samples were unexpectedly high in Hg resulting in contamination of the analytical system. It took 3 hours to decontaminate the system and get it back to work. Since Hg concentrations of samples ranged from sub-ppt to tens of ppb, to protect the system from contamination and get samples analyzed at the optimal concentration range of the method, all samples were pre-analyzed using less sensitive EPA 245.7, and then analyzed using appropriate sample sizes by EPA 1631. Some low concentration samples were analyzed using about 100 mL while the highest concentration sample was analyzed using 0.1 mL only.

Analytical Sheet							
Project: Exponent-02-02-THg							
Date: 10/1/02, Sample received on 9/26-28/02							
CF: 0.286+/-0.030(10.5%)							
BB: 75+/-30							
Sample ID		Vol. Anal.,mL	BrCl, pg	PA	CF	THg, ng/L	% Rec.
1000 PG				3384	0.302		
50 PG				291	0.231		
100 PG				412	0.297		
500 PG				1872	0.278		
2000 PG				6361	0.318		
4000 PG				14002	0.287		
EXP-02-02-15		81.2	30	471		1.03	
BB				120			
OPR1		100	20	1659		4.33	86.6
BB				61			
EXP-02-02-7		63.4	20	7011		30.97	
EXP-02-02-8		63.5	20	11378		50.59	
EXP-02-02-9		67.4	20	751		2.57	
EXP-02-02-10		68.2	20	5488		22.41	
EXP-02-02-15		106.3	40	664		1.21	
EXP-02-02-16		104.4	40	455		0.66	
CF: 0.392+/-0.011(2.7%)							
EXP-02-02-11		80.8	30	2127		9.58	
6000 PG				16077	0.375		
EXP-02-02-1		84.3	30	654		2.34	
EXP-02-02-2		89.3	30	4087		17.28	
EXP-02-02-33		98.6	40	>2M			
15000 PG				38048	0.395		
EXP-02-02-3		83.8	30	476		1.52	
EXP-02-02-4		84.5	30	5247		23.64	
EXP-02-02-5		86.2	30	6480		28.78	
EXP-02-02-6		80	30	15249		73.98	
EXP-02-02-17		95.6	40	8322		33.40	
EXP-02-02-18		88.7	30	8090		35.08	
EXP-02-02-19		93.4	40	1552		5.77	
EXP-02-02-20		83.9	30	14922		69.01	
EXP-02-02-21		96.3	40	>2M			
EXP-02-02-22		92.7	40	>2M			
BB				63			
MB		100	40	164		-0.05	
EXP-02-02-30		0.1		5919		22908.48	
EXP-02-02-29		0.2		6478		12549.88	
EXP-02-02-24		0.5		7081		5492.70	
EXP-02-02-34		0.5		4994		3856.50	
EXP-02-02-22		0.5		7934		6161.46	
EXP-02-02-33		3		6518		841.89	
EXP-02-02-21		3		8211		1063.10	
EXP-02-02-27		4		6028		583.39	
EXP-02-02-32		5		5259		406.43	
EXP-02-02-36		5		4474		344.88	
EXP-02-02-23		5		8205		637.39	

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Sample ID		Vol. Anal., mL	BrCl, pg	PA	CF	THg, ng/L	% Rec.
EXP-02-02-25		10		4965		191.69	
EXP-02-02-35		30	10	4336		55.34	
EXP-02-02-20		30	10	5030		64.41	
EXP-02-02-17		50	15	3997		30.45	
EXP-02-02-18		50	15	4214		32.15	
EXP-02-02-14		30	10	3854		49.05	
EXP-02-02-13		50	15	3526		26.76	
EXP-02-02-25+	200	10		9775		380.24	94.3
EXP-02-02-27+	500	4		10892		1060.07	95.3
EXP-02-02-1+	10.2	98	40	2948		11.08	85.7
EXP-02-02-3+	10.38	96.3	40	2972		11.38	95
EXP-02-02-31		15		5060		130.27	
EXP-02-02-12		50	15	9053		70.09	
WS-68	8.93ug/L	0.2		4520		8712.20	97.8
OPR2		100	20	1387		4.94	98.8
BB				55			
1000 PG				2569	0.401		
1000 PG				2577	0.400		
1000 PG				2650	0.388		
					0.396+/-0.007(1.8%)		

Analytical Report to Exponent

Project: Wood-Ridge / 8600B3N.005

Water -Total mercury (THg) by EPA 1631

Sample received: September 26-28, 2002

Prepared and analyzed: September 26-October 1, 2002

Report NO.: Exp-02-02 Report date: October 2, 2002

Prepared by Lian Liang Ph. D., Cebam Analytical, Inc.

Sample ID-Tag No.	Lab ID	THg, ng/L as Hg	Dup	Mean	RPD	MS	Spike level	Rec., %
GW0301-47504	EXP-02-02-01	2.34				11.08	10.2	85.7
GW0301-47505	EXP-02-02-02	17.28						
GW0302-47508	EXP-02-02-03	1.52				11.38	10.38	95
GW0302-47509	EXP-02-02-04	23.64						
GW0303-47512	EXP-02-02-05	28.78						
GW0303-47513	EXP-02-02-06	73.98						
GW0304-47518	EXP-02-02-07	30.97						
GW0304-47519	EXP-02-02-08	50.59						
GW0305-47522	EXP-02-02-09	2.57						
GW0305-47523	EXP-02-02-10	22.41						
GW0306-47526	EXP-02-02-11	9.58						
GW0306-47527	EXP-02-02-12	70.09						
GW0307-47530	EXP-02-02-13	26.76						
GW0307-47531	EXP-02-02-14	49.05						
GW0308-47536	EXP-02-02-15	1.21	1.03	1.12	15.9			
GW0308-47537	EXP-02-02-16	0.66						
GW0309-45740	EXP-02-02-17	33.40	30.45	31.92	9.2			
GW0309-45741	EXP-02-02-18	35.08	32.15	33.62	8.7			
GW0310-45744	EXP-02-02-19	5.77						
GW0310-45745	EXP-02-02-20	69.01	64.41	66.71	6.9			
GW0311-45748	EXP-02-02-21	1063.10						
GW0311-45749	EXP-02-02-22	6161.46						
GW0312-45752	EXP-02-02-23	637.39						

Sample ID-Tag No.	Lab ID	THg, ng/L as Hg	Dup	Mean	RPD	MS	Spike level	Rec., %
GW0312-45753	EXP-02-02-24	5492.70						
GW0313-45758	EXP-02-02-25	191.69				380.24	200	94.3
GW0313-45759	EXP-02-02-26	For MS						
GW0313-45760	EXP-02-02-27	583.39				1060.07	500	95.3
GW0313-45761	EXP-02-02-28	For MS						
GW0314-45764	EXP-02-02-29	12549.88						
GW0314-45765	EXP-02-02-30	22908.48						
GW0315-45768	EXP-02-02-31	130.27						
GW0315-45769	EXP-02-02-32	406.43						
GW0316-45772	EXP-02-02-33	841.89						
GW0316-45773	EXP-02-02-34	3856.50						
GW0317-45776	EXP-02-02-35	55.34						
GW0317-45777	EXP-02-02-36	344.88						
	OPR1	4.33					5.0	86.6
	OPR2	4.94					5.0	98.8
	WS-68	8712.20					8930	97.8
	MB	<0.2						
	MDL	0.2						

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Project: (Name and Number) <u>Wood-Ridge / 860053N.005</u>										Exponent																																																																																																																																																																																																																			
Exponent Contact: <u>Betsy Henry</u> Office: <u>Albany, NY</u>					Samplers: <u>Rick Jensen / Jerome Wozniak</u>					Environmental Group Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830																																																																																																																																																																																																																			
Ship to: <u>CEBAM Analytical, Inc.</u> <u>3927 Aurora Ave N.</u> <u>Seattle, WA 98103</u>					Analyses Requested																																																																																																																																																																																																																								
Lab Contact/Phone: <u>Mrs. Lian Liang / 206-632-9097</u>					<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 1631 TAG (Mandatory)</div> <div style="text-align: center;">LAB ID</div> <div style="writing-mode: vertical-rl;">Extra Container</div> <div style="writing-mode: vertical-rl;">Archive</div> </div>																																																																																																																																																																																																																								
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;">Sample No.</th> <th style="width:15%;">Tag No.</th> <th style="width:10%;">Date</th> <th style="width:10%;">Time</th> <th style="width:10%;">Matrix</th> <th style="width:10%;">X</th> <th style="width:10%;">Y</th> <th style="width:10%;">Z</th> <th style="width:10%;">W</th> <th style="width:10%;">V</th> </tr> </thead> <tbody> <tr><td>GW0308</td><td>47536</td><td>26-Sep-02</td><td>0745</td><td>GW</td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>47537</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0309</td><td>45740</td><td></td><td>1240</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45741</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0310</td><td>45744</td><td></td><td>1335</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45745</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0311</td><td>45748</td><td></td><td>1705</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45749</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0312</td><td>45752</td><td></td><td>1715</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45753</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0313</td><td>45758</td><td></td><td>1755</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45759</td><td></td><td>↓</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>45760</td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45761</td><td></td><td>↓</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0314</td><td>45764</td><td></td><td>1940</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45765</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0315</td><td>45768</td><td>27-Sep-02</td><td>1025</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45769</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>GW0316</td><td>45772</td><td></td><td>1100</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td>↓</td><td>45773</td><td></td><td>↓</td><td></td><td>X</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>					Sample No.	Tag No.	Date	Time	Matrix			X	Y	Z	W	V	GW0308	47536	26-Sep-02	0745	GW	X					↓	47537		↓		X					GW0309	45740		1240		X					↓	45741		↓		X					GW0310	45744		1335		X					↓	45745		↓		X					GW0311	45748		1705		X					↓	45749		↓		X					GW0312	45752		1715		X					↓	45753		↓		X					GW0313	45758		1755		X					↓	45759		↓								45760				X					↓	45761		↓							GW0314	45764		1940		X					↓	45765		↓		X					GW0315	45768	27-Sep-02	1025		X					↓	45769		↓		X					GW0316	45772		1100		X					↓	45773		↓		X					Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water OTHER - Please identify codes: _____				
Sample No.	Tag No.	Date	Time	Matrix	X	Y	Z	W	V																																																																																																																																																																																																																				
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Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other: _____					Condition of Samples Upon Receipt: _____					Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None																																																																																																																																																																																																																			

Relinquished by: <u>[Signature]</u>	Date/Time: <u>27-Sep-02 1900</u>	Received by: <u>FedEx</u>	Date/Time: <u>27-Sep-02 1900</u>
Relinquished by: _____	Date/Time: _____	Received by: <u>P. P. Pang</u>	Date/Time: <u>9-28-02 1140</u>

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 2 of 2

Project: (Name and Number) <u>Wood-Ridge / 86003N.005</u>										Exponent Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830										
Exponent Contact: <u>Betsy Henry</u>			Office: <u>Albany NY</u>		Samplers: <u>Rick Jensen / Jerome Wartz</u>															
Ship to: <u>CEBAK Analytical, Inc.</u> <u>3927 Aurora Ave N.</u> <u>Seattle, WA 98103</u>			Analyses Requested					Extra Container	Archive	Environmental Group										
Lab Contact/Phone: <u>Ms. Liam Liang / 206-632-9097</u>			LAB ID																	
Sample No.	Tag No.	Date	Time	Matrix	EPA 1631 Total Mercury															Remarks
6W0317	45716	27-Sep-02	1315	GW	X															Filtered
↓	45777	↓	↓	↓	X															unfiltered
<p><i>Form Deleted</i></p> <p><i>27 Sep-02</i></p>																				
Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water OTHER - Please identify codes _____										Priority: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Rush time period _____										
Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other _____										Condition of Samples Upon Receipt: _____					Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None					

Relinquished by: <u><i>[Signature]</i></u> (Signature)	Date/Time: <u>27-Sep-02 1900</u>	Received by: <u>FEDEX</u> (Signature)	Date/Time: <u>27-Sep-02 1900</u>
Relinquished by: _____ (Signature)	Date/Time: _____	Received by: <u>P. Pary</u> (Signature)	Date/Time: <u>9-28-02 1140</u>

825840043

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 1 of 1

Project: (Name and Number) <u>Wood-Ridge / 8600B3N.005</u>										Exponent Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830									
Exponent Contact: <u>Betsy Hony</u>			Office: <u>NY</u> (Hanson)			Samplers: <u>Rick Jenson / Jerome Urentz</u>													
Ship to: <u>CEBAI Analytical, Inc.</u> <u>3927 Aurora Ave. N.</u> <u>Seattle, WA 98103</u>			Analyses Requested										Extra Container	Archive					
Lab Contact/Phone: <u>Mrs. Liang Liang / 206-632-9097</u>			EPA 161 Total Mercury																
Sample No.	Tag No.	Date	Time	Matrix															
GW0301	47504	24-Sep-02	1715	GW	X														
↓	47505		↓		X														
GW0302	47508		1720		X														
↓	47509	↓	↓		X														
GW0303	47512	25-Sep-02	1000		X														
↓	47513		↓		X														
GW0304	47518		1230		X														
↓	47519		↓		X														
GW0305	47522		1405		X														
↓	47523		↓		X														
GW0306	47526		1720		X														
↓	47527		↓		X														
GW0307	47530		1750		X														
↓	47531	↓	↓	↓	X														

Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water
 OTHER - Please identify codes _____

Priority: ☒ Normal ☐ Rush Rush time period _____

Shipped via: ☒ FedEx/UPS ☐ Courier Other _____

Condition of Samples Upon Receipt: _____ Custody Seal Intact: ☐ Yes ☐ No ☐ None

Relinquished by: [Signature] Date/Time: 2015/15-Sep-02 Received by: FedEx Date/Time: 2015 25-Sep-02

Relinquished by: _____ Date/Time: _____ Received by: P. Pany Date/Time: 9-26-02/0930



A FULL SERVICE ENVIRONMENTAL LABORATORY

October 25, 2002

Mr. Dave Lamadrid
Exponent
4000 Kruseway Place
Bldg 2, Suite 285
Lake Oswego, OR 97035

PROJECT:WOOD-RIDGE, NJ
Submission #:R2214005

Dear Mr. Lamadrid:

Enclosed are the analytical results of the analyses requested. The analytical data was provided to you on 10/24/02 per a Facsimile transmittal. All data has been reviewed prior to report submission.

Should you have any questions please contact me at (585) 288-5380.

Thank you for letting us provide this service.

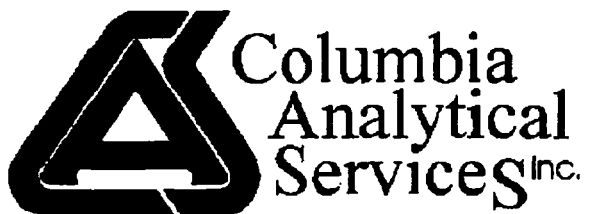
Sincerely,

COLUMBIA ANALYTICAL SERVICES


Michael Perry
Laboratory Director

Enc.

825840045



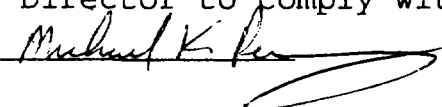
1 Mustard ST.
Suite 250
Rochester, NY 14609
(585) 288-5380

THIS IS AN ANALYTICAL TEST REPORT FOR:

Client : Exponent
Project Reference: WOOD-RIDGE, NJ
Lab Submission # : R2214005
Project Manager : Michael Perry
Reported : 10/25/02

Report Contains a total of 144 pages

The results reported herein relate only to the samples received by the laboratory. This report may not be reproduced except in full, without the approval of Columbia Analytical Services.

This package has been reviewed by Columbia Analytical Services' QA Department/Laboratory Director to comply with NELAC standards prior to report submittal. 

825840046

0001

SDG NARRATIVE

CASE NARRATIVE

COMPANY: Exponent
Project: Wood-Ridge, NJ
SDG#: GW0301
SUBMISSION #: R2214005

NYS DEC water samples were collected the week of 09/24/02 –09/27/02 and received at CAS in good condition on 09/28/02. See CAS CLP Batching sheets for a cross-reference between Client ID and CAS Job # and analyses requested. A NJ Reduced Deliverables package has been provided.

METALS ANALYSIS

Seventeen water samples were analyzed for a site-specific list of (7) Total Metals using SW-846 ICP method 6010B.

The initial and continuing calibration criteria were met for all analytes.

The matrix spike and duplicate analyses was performed on sample GW0313. The blank spike recoveries (LCS) were all within QC limits of 80 – 120 %. All Matrix Spike Recoveries were within QC limits of 75 – 125 %.. The Spiked Sample Recovery for Iron could not be accurately determined since the amount detected in the sample was greater than four times the spike amount added. The % RPD's from the duplicate analyses were all within QC limits.

No other analytical or QC problems were encountered.



Effective 6/28/2002

INORGANIC QUALIFIERS

C (Concentration) qualifier -

- B - if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but was greater than or equal to the Instrument Detection Limit (IDL).
- U - if the analyte was analyzed for, but not detected

Q qualifier - Specified entries and their meanings are as follows:

- E - The reported value is estimated because of the presence of interference.
- J - Estimated Value
- M - Duplicate injection precision not met.
- N - Spiked sample recovery not within control limits.
- S - The reported value was determined by the Method of Standard Additions (MSA).
- W - Post-digestion spike for Furnace AA Analysis is out of control limits (85-115), while sample absorbance is less than 50% of spike absorbance.
- * - Duplicate analysis not within control limits.
- + - Correlation coefficient for the MSA is less than 0.995.

M (Method) qualifier:

- "P" for ICP
- "A" for Flame AA
- "F" for Furnace AA
- "PM" for ICP when Microwave Digestion is used
- "AM" for Flame AA when Microwave Digestion is used
- "FM" for Furnace M when Microwave Digestion is used
- "CV" for Manual Cold Vapor AA
- "AV" for Automated Cold Vapor AA
- "CA" for Midi-Distillation Spectrophotometric
- "AS" for Semi-Automated Spectrophotometric
- "C" for Manual Spectrophotometric
- "T" for Titrimetric
- " " where no data has been entered
- "NR" if the analyte is not required to be analyzed.

CAS/Rochester Lab ID # for State Certifications

Army Corp of Engineers Validated
Delaware Accredited
Connecticut ID # PH0556
Florida ID # E87674
Massachusetts ID # M-NY032
Navy Facilities Engineering Service Center Approved
Nebraska Accredited

NELAP Accredited
New York ID # 10145
New Jersey ID # NY004
New Hampshire ID # 294100 A/B
Rhode Island ID # 158
South Carolina ID #91012
West Virginia ID # 292

**CHAINS OF CUSTODY
INTERNAL CHAINS**

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 1 of 1

Project: (Name and Number) <u>Wood-Ridge 8600B3N.005</u>										Exponent Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830				
Exponent Contact: <u>Betsy Henry</u> Office: <u>NY</u>					Samplers: <u>Rick Jensen / Jerome Wentz</u>									
Ship to: <u>Columbia Analytical Services</u> <u>1 Mustang Jct, Suite 250</u> <u>Rochester, NY 14609</u>					Analyses Requested									
Lab Contact/Phone: <u>Mike Perry 585-288-5380</u>					<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> EPA 600/7-000 Total Ba, Cu, Fe, Mn, Ni, V, Pb </div> <div style="width: 80%;"></div> </div>									
Sample No.		Tag No.	Date	Time	Matrix						Extra Container	Archive	Environmental Group	
GW0301		47502	24-Sep-02	1220	GW	X								Remarks Note: All samples are unfiltered.
GW0302		47507	↓	1720		X								
GW0303		47511	25-Sep-02	1000		X								
GW0304		47517		1230		X								
GW0305		47521		1405		X								
GW0306		47525		1720		X								
GW0307		47529	↓	1750		X								
GW0308		47533	26-Sep-02	0745		X								
GW0309		457389		1240		X								
GW0310		45743		1335		X								
GW0311		45747		1705		X								
GW0312		45751		1715		X								
GW0313		45756		1755		X								
GW0314		45763	↓	1940		X								
GW0315		45767	27-Sep-02	1025		X								
GW0316		45771		1100		X								
GW0317		45775	↓	1315	↓	X								
GW0313		45757	26-Sep-02	1755	GW							X	Please use for MS	
Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water OTHER - Please identify codes _____						Priority: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Rush time period _____ <u>R22-14005</u>								
Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other _____						Condition of Samples Upon Receipt: <u>5°C</u>				Custody Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None				

Relinquished by: [Signature] Date/Time: 27-Sep-02 1900 Received by: FedEx Date/Time: 27-Sep-02 1900
(Signature)

Relinquished by: _____ Date/Time: _____ Received by: [Signature] Date/Time: 9/28/02 1030
(Signature)

825840052

Distribution: White and Yellow Copies - Accompany Shipment; Pink Copy - Project File

3218

Cooler Receipt And Preservation Check Form

Project/Client Exponent Submission Number R2-14005Cooler received on 9/2/02 by: 9/2/02 COURIER: CAS UPS FEDEX CD&L CLIENT

1. Were custody seals on outside of cooler? YES NO
2. Were custody papers properly filled out (ink, signed, etc.)? YES NO
3. Did all bottles arrive in good condition (unbroken)? YES NO
4. Did any VOA vials have significant air bubbles? YES NO N/A
5. Were Ice or Ice packs present? YES NO
6. Where did the bottles originate? CAS/ROC CLIENT
7. Temperature of cooler(s) upon receipt: 5°

Is the temperature within 0° - 6° C?: Yes Yes Yes Yes Yes

If No, Explain Below No No No No No

Date/Time Temperatures Taken: 9/2/02 1105Thermometer ID: 161 or IR GUN Reading From: Temp Blank or Sample Bottle

If out of Temperature, Client Approval to Run Samples _____

Cooler Breakdown: Date: 9-30-02 by: AE

1. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies: _____

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO ₃	✓				
2	H ₂ SO ₄					
Residual Chlorine (+/-)	for TCN & Phenol					
5-9**	P/PCBs (608 only)					

YES = All samples OK

NO = Samples were preserved at lab as listed

PC OK to adjust pH _____

**If pH adjustment is required, use NaOH and/or H₂SO₄

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

Other Comments:

825840053

Chain of Custody

Submission: R2214005 **Client:**

Lab ID: 588686 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886861

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:16	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588687 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886871

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:16	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588688 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886881

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:16	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588689 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886891

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:16	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

0009

Chain of Custody

Submission: R2214005 **Client:**

Lab ID: 588690 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886901

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588691 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886911

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588692 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886921

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:53	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588693 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886931

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214005 **Client:**

Lab ID: 588694 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886941

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588695 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886951

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588696 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886961

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588697 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886971

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214005 **Client:**

Lab ID: 588698 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886981

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Container: 5886982

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588699 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5886991

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588700 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5887001

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214005 **Client:**

Lab ID: 588701 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5887011

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

Lab ID: 588702 **Matrix** WATER

Received into CAS-Rochester Custody: 9/28/02 10:30:00 A

Container: 5887021

Date of Custody	User	Dept	Storage Location	Purpose	Empty
09/30/02 11:52	gesmeria	Sample Management	Ambient 1	Storage	<input type="checkbox"/>
10/14/02 14:09	tmccarth	Metals	Ambient 1	Analysis	<input type="checkbox"/>
10/14/02 14:17	tmccarth	Metals	LTS	Storage	<input type="checkbox"/>

SAMPLE DATA

METALS
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Contract: R2214005

SDG No.: GW0301

Lab Code:

Case No.:

SAS No.:

OW No.: SW846 CLP-M

Client: Exponent

<u>Sample No.</u>	<u>Lab Sample ID.</u>
GW0301	588686
GW0302	588687
GW0303	588688
GW0304	588689
GW0305	588690
GW0306	588691
GW0307	588692
GW0308	588693
GW0309	588694
GW0310	588695
GW0311	588696
GW0312	588697
GW0313	588698
GW0313D	588698D
GW0313S	588698S
GW0314	588699
GW0315	588700
GW0316	588701
GW0317	588702

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NOComments: See Attached Case Narrative

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:

Michael K. Perry

Name:

Michael K. Perry

Date:

10/25/02

Title:

Laboratory Manager

0015

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0301

Tract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588686

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	315			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	7630			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	681			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	62.9			P

Color Before: YELLOW Clarity Before: CLEAR

Texture:

Color After: COLORLESS Clarity After: CLEAR

Artifacts:

Comments:

0016

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0302

Contract: R2214005

Lab Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588687

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	493			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	18100			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	838			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0303

Extract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588688

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	670			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	20700			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	1040			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW Clarity Before: CLEAR

Texture:

Color After: COLORLESS Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0304

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588689

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	1100			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	17300			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	1200			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

825840064

0019

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0305

Extract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588690

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	592			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	19400			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	1050			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW Clarity Before: CLEAR Texture:
 Color After: COLORLESS Clarity After: CLEAR Artifacts:
 Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0306

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588691

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	150			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	15800			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	2820			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

0021

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0307

Extract: R2214005

Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588692

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	90.3			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	100			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	182			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

825840067

0022

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0308

Contract: R2214005

Lab Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588693

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	20.0	U		P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	10.0	U		P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0309

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588694

pH (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): µG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	300			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	100	U		P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	3690			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

825840069

0024

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0310

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588695

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	194			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	17300			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	3730			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0311

Contract: R2214005

Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588696

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	363			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	27100			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	861			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

825840071

0026

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0312

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG No.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588697

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	372			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	27600			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	889			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

0027

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0313

Tract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588698

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	395			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	31700			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	4180			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW Clarity Before: CLEAR

Texture:

Color After: COLORLESS Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0314

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588699

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	338			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	2350			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	1380			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

0029

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0315

Contract: R2214005

Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588700

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	471			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	122			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	366			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0316

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Lab Sample ID: 588701

Level (low/med): LOW

Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	20.0	U		P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	387			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	10.0	U		P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0317

Extract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Matrix (soil/water): WATER Lab Sample ID: 588702

Level (low/med): LOW Date Received: 09/28/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7440-39-3	Barium	75.4			P
7440-50-8	Copper	20.0	U		P
7439-89-6	Iron	5110			P
7439-92-1	Lead	5.0	U		P
7439-96-5	Manganese	1500			P
7440-02-0	Nickel	40.0	U		P
7440-62-2	Vanadium	50.0	U		P

Color Before: YELLOW Clarity Before: CLEAR

Texture:

Color After: COLORLESS Clarity After: CLEAR

Artifacts:

Comments:

0032

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Barium	10000.0	10171.34	101.7	10000.0	10113.63	101.1	10278.54	102.8	P
Copper	1250.0	1229.23	98.3	1250.0	1243.28	99.5	1239.99	99.2	P
Iron	5000.0	4907.94	98.2	5000.0	4979.40	99.6	4968.15	99.4	P
Lead	500.0	495.96	99.2	500.0	499.06	99.8	499.76	100.0	P
Manganese	750.0	756.50	100.9	750.0	754.92	100.7	773.13	103.1	P
Nickel	2000.0	1996.94	99.8	2000.0	2012.47	100.6	2018.79	100.9	P
Vanadium	2500.0	2443.94	97.8	2500.0	2463.81	98.6	2468.17	98.7	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

tract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

cial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Barium				10000.0	10308.61	103.1	10085.29	100.9	P
Copper				1250.0	1243.37	99.5	1253.61	100.3	P
Iron				5000.0	4990.33	99.8	4937.86	98.8	P
Lead				500.0	499.07	99.8	497.12	99.4	P
Manganese				750.0	766.74	102.2	751.86	100.2	P
Nickel				2000.0	2028.45	101.4	2005.06	100.3	P
Vanadium				2500.0	2478.56	99.1	2463.02	98.5	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				1250.0	1238.06	99.0	1245.28	99.6	P
Iron				5000.0	4961.25	99.2	4988.86	99.8	P
Lead				500.0	497.59	99.5	503.31	100.7	P
Nickel				2000.0	2011.47	100.6	2026.92	101.3	P
Vanadium				2500.0	2460.86	98.4	2481.66	99.3	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				1250.0	1246.23	99.7	1262.25	101.0	P
Iron				5000.0	4991.20	99.8	4988.75	99.8	P
Lead				500.0	501.25	100.3	502.93	100.6	P
Nickel				2000.0	2020.14	101.0	2037.73	101.9	P
Vanadium				2500.0	2479.30	99.2	2502.57	100.1	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

0036

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Copper				1250.0	1274.22	101.9	1271.41	101.7	P
Iron				5000.0	5031.45	100.6	5360.87	107.2	P
Lead				500.0	499.75	99.9	505.75	101.2	P
Nickel				2000.0	2056.28	102.8	2045.43	102.3	P
Vanadium				2500.0	2525.77	101.0	2510.15	100.4	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214005

Code:

Case No.:

SAS No.:

SDG No.: GW0301

CRDL Standard Source:

CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial			Final	
				True	Found	%R	Found	%R
Barium				200.0	202.37	101.2	206.52	103.3
Copper				25.0	25.23	100.9	22.70	90.8
Iron				100.0	80.92	80.9	113.96	114.0
Lead				10.0	9.01	90.1	9.96	99.6
Manganese				15.0	15.62	104.1	16.03	106.9
Nickel				40.0	42.06	105.2	41.35	103.4
Vanadium				50.0	49.05	98.1	48.49	97.0

METALS

-3-

BLANKS

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
		1	2	3						
Barium	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.000	U	P
Copper	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.000	U	P
Iron	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.000	U	P
Lead	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.000	U	P
Manganese	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.000	U	P
Nickel	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.000	U	P
Vanadium	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.000	U	P

METALS

-3-

BLANKS

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Barium			20.0	U							P
Copper			20.0	U	20.0	U	20.0	U			P
Iron			100.0	U	100.0	U	100.0	U			P
Lead			5.0	U	5.0	U	5.0	U			P
Manganese			10.0	U							P
Nickel			40.0	U	40.0	U	40.0	U			P
Vanadium			50.0	U	50.0	U	50.0	U			P

METALS

-3-

BLANKS

Contract: R2214005

Lab Code: Case No.: SAS No.: SDG NO.: GW0301

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Copper			20.0	U	20.0	U	20.0	U			P
Iron			100.0	U	100.0	U	100.0	U			P
Lead			5.0	U	5.0	U	5.0	U			P
Nickel			40.0	U	40.0	U	40.0	U			P
Vanadium			50.0	U	50.0	U	50.0	U			P

METALS

-3-

BLANKS

Project: R2214005

Code: _____ **Case No.:** _____ **SAS No.:** _____ **SDG NO.:** GW0301

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Copper			20.0	U							P
Iron			100.0	U							P
Lead			5.0	U							P
Nickel			40.0	U							P
Vanadium			50.0	U							P

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0042

-4-

ICP INTERFERENCE CHECK SAMPLE

Contract: R2214005

b Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: GW0301
P ID Number: Optima ICP ICS Source: PE PURE

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Barium		500	4	537.5	107.5	4	530.5	106.1
Manganese		500	1	496.3	99.3	1	488.1	97.6

ICP INTERFERENCE CHECK SAMPLE

Contract: R2214005

Code: Case No.: SAS No.: SDG NO.: GW0301

ID Number: Optima ICP 2 ICS Source: PE PURE

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Copper		500	-1	529.6	105.9	-2	534.7	106.9
Iron	200000	200000	187726	188268.0	94.1	188192	189176.9	94.6
Lead		50	0	48.7	97.4	0	48.5	97.0
Nickel		1000	0	929.1	92.9	1	940.4	94.0
Vanadium		500	-2	505.5	101.1	-2	507.1	101.4

METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW03138

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Barium	75 - 125	2515.8301	394.8679	2000.00	106.0		P
Copper	75 - 125	281.7583	20.0000 U	250.00	112.7		P
Iron		33285.9570	31743.0508	1000.00	154.3		P
Lead	75 - 125	495.5022	5.0000 U	500.00	99.1		P
Manganese		4792.4155	4177.2720	500.00	123.0		P
Nickel	75 - 125	521.7316	40.0000 U	500.00	104.3		P
Vanadium	75 - 125	539.5754	50.0000 U	500.00	107.9		P

Comments:

METALS

-5B-

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313A

Tract: R2214005

Code:

Case No.:

SAS No.:

SDG NO.: GW0301

ix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Barium		1946.68	394.87	2000.0	77.6		P
Copper		268.43	20.00 U	250.0	107.4		P
Iron		31912.08	31743.05	1000.0	16.9		P
Lead		468.63	5.00 U	500.0	93.7		P
Manganese		4678.69	4177.27	500.0	100.3		P
Nickel		491.65	40.00 U	500.0	98.3		P
Vanadium		508.88	50.00 U	500.0	101.8		P

ments:

METALS

-6-

DUPLICATES

SAMPLE NO.

GW0313D

Contract: R2214005

Lab Code:

Case No.:

SAS No.:

SDG NO.: GW0301

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

% Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Barium		394.8679		413.0077		4.5		P
Copper		20.0000	U	20.0000	U			P
Iron		31743.0508		32790.2852		3.2		P
Lead		5.0000	U	5.0000	U			P
Manganese		4177.2720		4373.5381		4.6		P
Nickel		40.0000	U	40.0000	U			P
Vanadium		50.0000	U	50.0000	U			P

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214005

Code:

Case No.:

SAS No.:

SDG NO.: GW0301

and LCS Source:

Source LCS Source: CPI

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Barium	2000.0	2111.22	105.6						
Copper	250.0	276.19	110.5						
Iron	1000.0	1051.42	105.1						
Lead	500.0	533.32	106.7						
Manganese	500.0	518.75	103.8						
Nickel	500.0	543.20	108.6						
Vanadium	500.0	518.23	103.6						

✓



A FULL SERVICE ENVIRONMENTAL LABORATORY

November 16, 2002

Mr. Dave Lamadrid
Exponent
4000 Kruseway Place
Bldg 2, Suite 285
Lake Oswego, OR 97035

RECEIVED
NOV 27 2002
At Exponent

PROJECT:WOOD-RIDGE, NJ
Submission #:R2214196

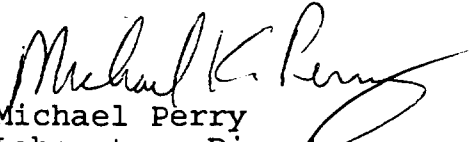
Dear Mr. Lamadrid

Enclosed are the analytical results of the analyses requested. All data has been reviewed prior to report submission. Should you have any questions please contact me at (585) 288-5380.

Thank you for letting us provide this service.

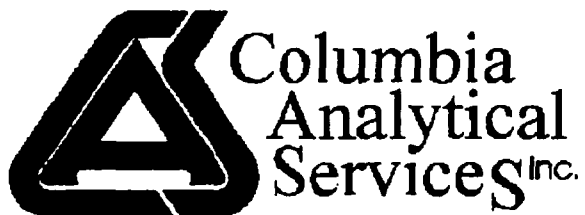
Sincerely,

COLUMBIA ANALYTICAL SERVICES


Michael Perry
Laboratory Director

Enc.

825840094



1 Mustard ST.
Suite 250
Rochester, NY 14609
(585) 288-5380

THIS IS AN ANALYTICAL TEST REPORT FOR:

Client : Exponent
Project Reference: WOOD-RIDGE, NJ
Lab Submission # : R2214196
Project Manager : Michael Perry
Reported : 11/16/02

Report Contains a total of 173 pages

The results reported herein relate only to the samples received by the laboratory. This report may not be reproduced except in full, without the approval of Columbia Analytical Services.

This package has been reviewed by Columbia Analytical Services' QA Department/Laboratory Director to comply with NELAC standards prior to report submittal. *Michael Perry*

825840095

SDG NARRATIVE

CASE NARRATIVE

COMPANY: Exponent
Project: Wood-Ridge, NJ
SDG#: 0930W
SUBMISSION #: R2214196

Exponent samples were collected the week of 10/07/02 and received at CAS in good condition 10/11/02 at a temperature of 3 ° C. See CAS CLP Batching sheets for a cross-reference between Client ID and CAS Job # and analyses requested.

METALS ANALYSIS

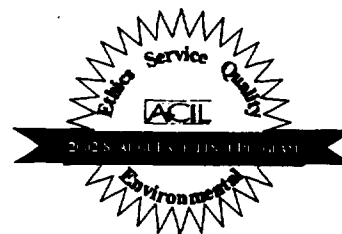
Fourteen soil samples and one water sample were analyzed for Mercury using SW-846 methods 7470/7471.

The initial and continuing calibration criteria were met for all analytes.

The matrix spike and duplicate analysis were performed on samples SP0001 and SP0016. The blank spike recoveries (LCS) were all within QC limits of 80 – 120 %. All Matrix Spike Recoveries were within QC limits of 75 – 125 %. The matrix spike recovery for sample SP0001 could not be accurately calculated due to the amount of analyte detected in the sample versus the spike amount added. The % RPD's from the duplicate analyses were all within QC limit.

No other analytical or QC problems were encountered.

SUMMARY PKG: Y____ N__x__



Effective 11/4/2002

INORGANIC QUALIFIERS

C (Concentration) qualifier -

- B - if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but was greater than or equal to the Instrument Detection Limit (IDL).
- U - if the analyte was analyzed for, but not detected

Q qualifier - Specified entries and their meanings are as follows:

- D - Spike was diluted out
- E - The reported value is estimated because of the presence of interference.
- J - Estimated Value
- M - Duplicate injection precision not met.
- N - Spiked sample recovery not within control limits.
- S - The reported value was determined by the Method of Standard Additions (MSA).
- W - Post-digestion spike for Furnace AA Analysis is out of control limits (85-115), while sample absorbance is less than 50% of spike absorbance.
- * - Duplicate analysis not within control limits.
- + - Correlation coefficient for the MSA is less than 0.995.

M (Method) qualifier:

- "P" for ICP
- "A" for Flame AA
- "F" for Furnace AA
- "PM" for ICP when Microwave Digestion is used
- "AM" for Flame AA when Microwave Digestion is used
- "FM" for Furnace M when Microwave Digestion is used
- "CV" for Manual Cold Vapor AA
- "AV" for Automated Cold Vapor AA
- "CA" for Midi-Distillation Spectrophotometric
- "AS" for Semi-Automated Spectrophotometric
- "C" for Manual Spectrophotometric
- "T" for Titrimetric
- " " where no data has been entered
- "NR" if the analyte is not required to be analyzed.

CAS/Rochester Lab ID # for State Certifications

Army Corp of Engineers Validated
 Delaware Accredited
 Connecticut ID # PH0556
 Florida ID # E87674
 Massachusetts ID # M-NY032
 Navy Facilities Engineering Service Center Approved
 Nebraska Accredited

NELAP Accredited
 New York ID # 10145
 New Jersey ID # NY004
 New Hampshire ID # 294100 A/B
 Rhode Island ID # 158
 South Carolina ID #91012
 West Virginia ID # 292

**CHAINS OF CUSTODY
INTERNAL CHAINS**

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 1 of 2

Project: (Name and Number) Ventron/Velsicol Wood-Ridge 8600B3N.005 0402

Exponent

Exponent Contact: David L. Madrid Office: 40

Ship to: Columbia Analytical Services

1 Mustard Street, Ste. 250

Rochester, NY 14609

Lab Contact/Phone: Mille Perry (585) 288-8475

Samplers: R22-14196

Analyses Requested

Total Mercury
EPA 7471

Extra Container

Archive

Environmental Group

Bellevue, WA
(425) 643-9803
Boston, MA
(781) 466-6681
Boulder, CO
(303) 444-7270
Portland, OR
(503) 636-4338
Washington, D.C.
(301) 577-7830

Remarks

Sample No.	Tag No.	Date	Time	Matrix
SP0001	27086	10/8/02	0945	SL
SP0002	27087		0950	
SP0003	27088		0955	
SP0004	27089	↓	1000	↓
GW0318	27090	10/9/02	0945	GW
SP0005	27091		1440	SL
SP0006	27092		1443	
SP0007	27093		1450	
SP0008	27094		1453	
SP0009	27095		1500	
SP0010	27096		1503	
SP0011	27097		1510	
SP0012	27098	↓	1530	↓
SP0013	37752		1555	
SP0014	37753		1557	
SP0015	37754		1610	
SP0016	37755		1625	
SP0017	37756	↓	1630	↓

Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water

OTHER - Please identify codes _____

Priority:

☐ Normal

☐ Rush

Rush time period _____

Shipped via:



FedEx/UPS



Courier

Other _____

Condition of Samples Upon Receipt: O.K.

Custody Seal Intact:



Yes



No



None

Relinquished by: David L. Madrid
(Signature)

Date/Time: 10/10/02 1700

Received by: Henry B. ...
(Signature)

Date/Time: 10-11-02 10:30

Relinquished by: _____
(Signature)

Date/Time: _____

Received by: _____
(Signature)

Date/Time: _____

Distribution: White and Yellow Copies - Accompany Shipment; Pink Copy - Project File

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day - 1 1 1

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Distribution: White and Yellow Copies - Accompany Shipment; Pink Copy - Project File

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Cooler Receipt And Preservation Check Form

Project/Client Exponent Submission Number R2-14196Cooler received on 10-11-02 by: HE COURIER: CAS UPS FEDEX CD&L CLIENT

1. Were custody seals on outside of cooler? YES NO
2. Were custody papers properly filled out (ink, signed, etc.)? YES NO
3. Did all bottles arrive in good condition (unbroken)? YES NO
4. Did any VOA vials have significant air bubbles? YES NO N/A
5. Were Ice or Ice packs present? YES NO
6. Where did the bottles originate? CAS/ROC CLIENT
7. Temperature of cooler(s) upon receipt: 3°

Is the temperature within 0° - 6° C?: Yes Yes Yes Yes Yes

If No, Explain Below No No No No No

Date/Time Temperatures Taken: 10-11-02 @ 10:35Thermometer ID: 161 or IR GUN Reading From: Temp Blank or Sample Bottle

If out of Temperature, Client Approval to Run Samples _____

Cooler Breakdown: Date: 10-11-02 by: KMC

1. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
 2. Did all bottle labels and tags agree with custody papers? YES NO
 3. Were correct containers used for the tests indicated? YES NO
 4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A
- Explain any discrepancies: _____

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO ₃	<u>X</u>				
2	H ₂ SO ₄					
Residual Chlorine (+/-)	for TCN & Phenol					
5-9**	P/PCBs (608 only)					

YES = All samples OK

NO = Samples were preserved at lab as listed

PC OK to adjust pH _____

**If pH adjustment is required, use NaOH and/or H₂SO₄

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

Other Comments:

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Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592437 **Matrix:** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924371

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924372

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592438 **Matrix:** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924381

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924382

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592439 **Matrix:** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924391

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924392

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592440 **Matrix:** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924401

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924402

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592441 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924411

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924412

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592442 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924421

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924422

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592443 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924431

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:15	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924432

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592444 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924441

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Container: 5924442

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:16	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592445 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924451

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:16	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924452

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592446 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924461

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:16	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924462

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 592450 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924501

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:16	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924502

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592453 **Matrix** SOIL

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924531

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 13:01	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 15:16	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 5924532

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:18	kcook	Sample Management	Cooler 2	Storage	<input type="checkbox"/>
10/18/02 11:55	gnita-jo	Wet Chemistry	Cooler 2	Analysis	<input type="checkbox"/>
10/18/02 16:23	gnita-jo	Wet Chemistry	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 592458 **Matrix** WATER

Received into CAS-Rochester Custody: 10/11/02 10:30:00

Container: 5924581

Date of Custody	User	Dept	Storage Location	Purpose	Empty
10/11/02 16:20	kcook	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
10/28/02 8:44	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
10/28/02 11:15	dbond	Metals	LTS	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214196 **Client:** Exponent

Lab ID: 599140 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/6/02

Container: 5991401

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/06/02 10:24	bcollom	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 5991402

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/06/02 10:25	bcollom	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/07/02 7:19	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/07/02 10:14	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Lab ID: 599141 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/6/02

Container: 5991411

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/06/02 10:24	bcollom	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 5991412

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/06/02 10:25	bcollom	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/07/02 7:19	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/07/02 10:14	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

METALS DATA

METALS
COVER PAGE - INORGANIC ANALYSES DATA PACKAGEContract: R2214196SDG No.: SP0002

Lab Code:

Case No.:

SAS No.:

HOW No.: SW846 CLP-MClient: ExponentSample No.Lab Sample ID.SP0001592437SP0001D592437DSP0001S592437SSP0002592438SP0003592439SP0004592440SP0005592441SP0006592442SP0007592443SP0013592444SP0014592445SP0015592446SP0018592450SP0019592453GW0318592458SP0016599140SP0016D599140DSP0016S599140SSP0020599141

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NOComments: See Attached Case Narrative

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:

Michael K. Perry

Name:

Michael K. Perry

Date:

11/20/02

Title:

Laboratory Manager

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METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0318

Extract: R2214196

Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): WATER

Lab Sample ID: 592458

Level (low/med): LOW

Date Received: 10/11/02

Concentration Units (ug/L or mg/kg dry weight): $\mu\text{G/L}$

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	1.7			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0001

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592437

Level (low/med): LOW

Date Received: 10/11/02

Solids: 79.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	750			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0002

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592438

Level (low/med): LOW

Date Received: 10/11/02

Solids: 83.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	128			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0003

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592439

Level (low/med): LOW

Date Received: 10/11/02

Solids: 86.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	252			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

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METALS

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0004

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592440

Level (low/med): LOW

Date Received: 10/11/02

Solids: 80.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	12.3			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0005

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592441

Level (low/med): LOW

Date Received: 10/11/02

Solids: 77.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	240			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0006

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592442

Level (low/med): LOW

Date Received: 10/11/02

Solids: 85.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.21			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0007

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592443

Level (low/med): LOW

Date Received: 10/11/02

Solids: 80.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.09			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0013

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592444

Level (low/med): LOW

Date Received: 10/11/02

Solids: 85.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	13.3			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0014

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592445

Level (low/med): LOW

Date Received: 10/11/02

% Solids: 87.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	31.7			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0015

Contract: R2214196

ID Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592446

Level (low/med): LOW

Date Received: 10/11/02

Solids: 73.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	42.8			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0016

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 599140

Level (low/med): LOW

Date Received: 11/06/02

Solids: 84.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.04	U		CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0018

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592450

Level (low/med): LOW

Date Received: 10/11/02

Solids: 88.5

Concentration Units (ug/L or mg/kg dry weight): **MG/KG**

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	2.8			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0019

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 592453

Level (low/med): LOW

Date Received: 10/11/02

Solids: 79.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	16.6			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0020

Contract: R2214196

Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 599141

Level (low/med): LOW

Date Received: 11/06/02

Solids: 81.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.04	U		CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

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33

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	3.0	2.93	97.7	3.0	2.93	97.7	2.76	92.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury				3.0	2.99	99.7	3.00	100.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: SP0002

Initial Calibration Source: _____

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.04	101.3	3.02	100.7	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Code: Case No.: SAS No.: SDG NO.: SP0002

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury				3.0	3.05	101.7			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002Initial Calibration Source: PE PUREContinuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	3.0	3.07	102.3	3.0	3.09	103.0	3.10	103.3	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.08	102.7	3.14	104.7	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.14	104.7			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214196

Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	3.0	3.04	101.3	3.0	3.03	101.0	3.02	100.7	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0002

AA CRDL Standard Source: CPI

ICP CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
				True	Found	%R	Found	%R
Mercury	0.2	0.21	105.0					

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214196

Code:

Case No.:

SAS No.:

SDG No.: SP0002

CRDL Standard Source: CPI

CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial True	Initial Found	Initial %R	Final Found	Final %R
Mercury	0.2	0.19	95.0					

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0002

AA CRDL Standard Source: CPI

ICP CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.2	0.20	100.0					

METALS

-3-

BLANKS

Contract: R2214196

Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury	0.20	U	0.20	U	0.20	U	0.20	U	0.033	U	CV

METALS

-3-

BLANKS

Contract: R2214196

b Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: SP0002

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury			0.20	U	0.20	U	0.20	U			CV

METALS

-3-

BLANKS

Contract: R2214196

Code: Case No.: SAS No.: SDG NO.: SP0002

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank		M
		1	C	2	C	3	C			
Mercury		0.20	U							CV

METALS

-3-

BLANKS

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Mercury	0.20	U	0.20	U	0.20	U	0.20	U	0.200	U	CV

METALS

-3-

BLANKS

Contract: R2214196

Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: SP0002

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury			0.20	U	0.20	U					CV

METALS

-3-

BLANKS

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002Preparation Blank Matrix (soil/water): SOILPreparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury	0.20	U	0.20	U	0.20	U			0.033	U	CV

METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

SP0001S

Contract: R2214196

Code: Case No.: SAS No.: SDG NO.: SP0002

Matrix (soil/water): SOIL/SED Level (low/med): LOW

Solids for Sample: 79.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury		881.7456	750.4049	0.19	69126.6		CV

Comments: _____

METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

SP0016S

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SED

Level (low/med): LOW

% Solids for Sample: 84.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury	75 - 125	0.2150	0.0381 U	0.19	114.7		CV

Comments:

METALS

-6-

DUPLICATES

SAMPLE NO.

SP0001D

Contract: R2214196

Job Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDI

Level (low/med): LOW

% Solids for Sample: 79.9

% Solids for Duplicate: 79.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Mercury		750.4049	901.2842	18.3		CV

METALS

-6-

DUPLICATES

SAMPLE NO.

SP0016D

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Matrix (soil/water): SOIL/SEDI

Level (low/med): LOW

Solids for Sample: 84.7

% Solids for Duplicate: 84.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Mercury		0.0381	U	0.0375	U			CV

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214196

Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.4		0.9 2.1	94.4

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214196

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG NO.: SP0002

Solid LCS Source:

Aqueous LCS Source: CPI

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury	1.0	1.01	101.0					

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214196

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0002

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.4		0.9 2.1	96.6

GENERAL CHEMISTRY

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0001

Date Sampled : 10/08/02 09:45

Order #: 592437

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	79.9	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0002

Date Sampled : 10/08/02 09:50

Order #: 592438

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	83.0	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0003

Date Sampled : 10/08/02 09:55

Order #: 592439

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	86.9	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0004

Date Sampled : 10/08/02 10:00

Order #: 592440

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	80.3	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0005

Date Sampled : 10/09/02 14:40

Order #: 592441

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	77.8	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0006

Date Sampled : 10/09/02 14:43

Order #: 592442

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	85.2	%	10/18/02	14:00	1.0

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COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0007

Date Sampled : 10/09/02 14:50

Order #: 592443

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	80.7	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0013

Date Sampled : 10/09/02 15:55

Order #: 592444

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	85.4	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0014

Date Sampled : 10/09/02 15:57

Order #: 592445

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	87.3	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0015

Date Sampled : 10/09/02 16:10

Order #: 592446

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	73.1	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0018

Date Sampled : 10/10/02 10:40

Order #: 592450

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	88.5	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOOD-RIDGE, NJ

Client Sample ID : SP0019

Date Sampled : 10/10/02 10:55

Order #: 592453

Sample Matrix: SOIL/SEDIMENT

Date Received: 10/11/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	79.0	%	10/18/02	14:00	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOODRIDGE, NJ

Client Sample ID : SP0016

Date Sampled : 10/09/02

Order #: 599140

Sample Matrix: SOIL/SEDIMENT

Date Received: 11/06/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	84.7	%	11/08/02	11:16	1.0

COLUMBIA ANALYTICAL SERVICES

Reported: 11/16/02

Exponent

Project Reference: WOODRIDGE, NJ

Client Sample ID : SP0020

Date Sampled : 10/10/02

Order #: 599141

Sample Matrix: SOIL/SEDIMENT

Date Received: 11/06/02

Submission #: R2214196

ANALYTE	METHOD	PQL	RESULT	DRY WEIGHT UNITS	DATE ANALYZED	TIME ANALYZED	DILUTION
PERCENT SOLIDS	160.0	1.0	81.1	%	11/08/02	11:16	1.0

RECEIVED

JAN - 9 2003

At Exponent
January 8, 2003



Mr. Dave Lamadrid
Exponent
4000 Kruseway Place
Bldg. 2, Suite 285
Lake Oswego, OR 97035

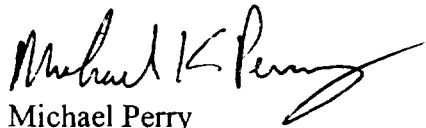
PROJECT: WOOD-RIDGE, NJ
Submission #: R2214662

Dear Mr. Lamadrid:

Enclosed are additional report pages for the above referenced project. Samples SP0043 and SP0044 were inadvertently left out of the report package that was previously sent to you. Please replace or insert these pages into the previous report package. I apologize for any inconvenience this may have caused. Should you have any questions please contact me at (585) 288-5380.

Sincerely,

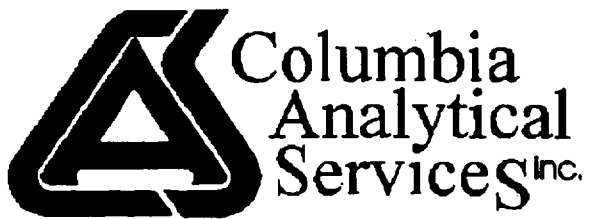
COLUMBIA ANALYTICAL SERVICES



Michael Perry
Laboratory Director

Enc.

825840167



1 Mustard ST.
Suite 250
Rochester, NY 14609
(585) 288-5380

THIS IS AN ANALYTICAL TEST REPORT FOR:

Client : Exponent
Project Reference: WOOD-RIDGE, NJ
Lab Submission # : R2214662
Project Manager : Michael Perry
Reported : 12/30/02

Report Contains a total of 161 pages

The results reported herein relate only to the samples received by the laboratory. This report may not be reproduced except in full, without the approval of Columbia Analytical Services.

This package has been reviewed by Columbia Analytical Services' QA Department/Laboratory Director to comply with NELAC standards prior to report submittal. *Michael E. Perry*

825840168

SDG NARRATIVE

CASE NARRATIVE

COMPANY: Exponent
SUBMISSION #: R2214662

NYS DEC samples were collected on 11/13/02 and received at CAS on 11/14/02 at a cooler temperature of 5 °C. See the CAS CLP Batching sheet for a cross-reference between Client ID and CAS Job # and analyses requested. A NJ Reduced deliverable data validation package was prepared.

METALS ANALYSIS

Twelve soil samples were analyzed for Total Mercury by EPA SW-846 method 7471.

The Blank Spike (LCS) and Matrix spike recoveries were all acceptable.

No other analytical or QC problems were encountered.

PROJECT: WOOD-RIDGE, NJ

CHAIN OF CUSTODY: PRESENT

SUMMARY PKG: Y___X___N

حکومت



Effective 11/4/2002

INORGANIC QUALIFIERS

C (Concentration) qualifier –

- B - if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but was greater than or equal to the Instrument Detection Limit (IDL).
- U - if the analyte was analyzed for, but not detected

Q qualifier - Specified entries and their meanings are as follows:

- D - Spike was diluted out
- E - The reported value is estimated because of the presence of interference.
- J - Estimated Value
- M - Duplicate injection precision not met.
- N - Spiked sample recovery not within control limits.
- S - The reported value was determined by the Method of Standard Additions (MSA).
- W - Post-digestion spike for Furnace AA Analysis is out of control limits (85-115), while sample absorbance is less than 50% of spike absorbance.
- * - Duplicate analysis not within control limits.
- + - Correlation coefficient for the MSA is less than 0.995.

M (Method) qualifier:

- "P" for ICP
- "A" for Flame AA
- "F" for Furnace AA
- "PM" for ICP when Microwave Digestion is used
- "AM" for Flame AA when Microwave Digestion is used
- "FM" for Furnace M when Microwave Digestion is used
- "CV" for Manual Cold Vapor AA
- "AV" for Automated Cold Vapor AA
- "CA" for Midi-Distillation Spectrophotometric
- "AS" for Semi-Automated Spectrophotometric
- "C" for Manual Spectrophotometric
- "T" for Titrimetric
- " " where no data has been entered
- "NR" if the analyte is not required to be analyzed.

CAS/Rochester Lab ID # for State Certifications

Army Corp of Engineers Validated
 Delaware Accredited
 Connecticut ID # PH0556
 Florida ID # E87674
 Massachusetts ID # M-NY032
 Navy Facilities Engineering Service Center Approved
 Nebraska Accredited

NELAP Accredited
 New York ID # 10145
 New Jersey ID # NY004
 New Hampshire ID # 294100 A/B
 Rhode Island ID # 158
 South Carolina ID #91012
 West Virginia ID # 292

**CHAINS OF CUSTODY
INTERNAL CHAINS**

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

12217002

Page 1 of 5

Project: (Name and Number) <u>Ventron/Velsicol - Wood Ridge Site 8600B3N.005 0402</u>					Exponent	
Exponent Contact: <u>David Lamadrid</u> Office: <u>LO</u>					Samplers: <u>David Lamadrid</u>	
Ship to: <u>Columbia Analytical Services</u>					Analyses Requested	
<u>1 Mustard Street, Suite 250</u>					Extra Container	Archive
<u>Rochester, NY 14609</u>						
Lab Contact/Phone: <u>Mike Perry (585) 288-5380</u>					Environmental Group	
					Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830	
Sample No.	Tag No.	Date	Time	Matrix	Total mercury EPA 7471	Remarks
SP0023	37801	11/13/02	0935	SL	X	
SP0024	37802		0942		X	
SP0025	37803		0945			
SP0026	37804		0955			
SP0027	37805		0957			
SP0028	37806		1005			
SP0029	37807		1008			
SP0030	37808		1015			
SP0031	37809		1018			
SP0032	37810		1035			
SP0033	37811		1038			
SP0034	37812		1045			
SP0035	37813		1048			
SP0036	37814		1105			
SP0037	37815		1108			
SP0038	37816		1210		X	
SP0039	37817		1212		X	
SP0040	37818		1215		X	
SP0041	37819		1218			
SP0042	37820	↓	1225	↓		
Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water					Priority: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Rush time period _____	
OTHER - Please identify codes _____					Condition of Samples Upon Receipt: <u>Good</u>	
Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other _____					Custody Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None	

Relinquished by: David Lamadrid (Signature) Date/Time: 11-13-02/1700 Received by: [Signature] (Signature) Date/Time: 11/14/02 930

Relinquished by: _____ (Signature) Date/Time: _____ Received by: _____ (Signature) Date/Time: _____

825840174

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3227

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 1 of 1

Project: (Name and Number) <u>Ventron/Velsicol Wood-Ridge site 8600B3 N.005 0402</u>										Exponent Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830																																																																																																																																																																																																																																																																																		
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Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other _____					Condition of Samples Upon Receipt: _____					Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None																																																																																																																																																																																																																																																																																		

Relinquished by: <u>David Lamadrid</u> (Signature)	Date/Time: <u>11-13-02/1700</u>	Received by: <u>Adam Stojin</u> (Signature)	Date/Time: <u>11/14/02 930</u>
Relinquished by: _____ (Signature)	Date/Time: _____	Received by: _____ (Signature)	Date/Time: _____

825840175

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CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 3 of 3

Project:
(Name and Number) Ventron/Velsicol Wood-Ridge Site 8600BJN.005

Exponent Contact: David Lamadrid Office: LO

Ship to: Columbia Analytical Services
1 Mustard Street, Suite 250
Rochester, NY 14609

Lab Contact/Phone: Mike Perry (585) 288-5380

Samplers: David Lamadrid

Analyses Requested

Total
Mercury
EPA 7471

Extra Container

Archive

Environmental Group

Exponent

Bellevue, WA
(425) 643-9803
Boston, MA
(781) 466-6681
Boulder, CO
(303) 444-7270
Portland, OR
(503) 636-4338
Washington, D.C.
(301) 577-7830

Remarks

Sample No.	Tag No.	Date	Time	Matrix
SP0063	37841	11-13-02	1525	SL
SP0064	37842		1528	
SP0065	37843		1545	
SP0066	37844		1548	
SP0067	37845		1605	
SP0068	37846	↓	1620	↓

Potential analysis
of archive samples
based on initial
results. For
results as soon
as availableA Z
11-13-02Matrix
Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water

OTHER - Please identify codes

Priority:

☒ Normal☐ Rush

Rush time period

Shipped
via: ☒ FedEx/UPS ☐ Courier OtherCondition of Samples
Upon Receipt:Custody Seal Intact: ☐ Yes ☐ No ☐ None

Relinquished by: David Lamadrid

(Signature)

Date/Time: 11-13-02/1700

Received by: David Lamadrid

(Signature)

Date/Time: 11/13/02 930

Relinquished by: (Signature)

Date/Time:

Received by: (Signature)

Date/Time:

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825840176

Cooler Receipt And Preservation Check Form

Project/Client Exponent Submission Number R2-14662

Cooler received on 11/14/02 by [signature] COURIER: CAS UPS FEDEX CD&L CLIENT

1. Were custody seals on outside of cooler? YES NO
2. Were custody papers properly filled out (ink, signed, etc.)? YES NO
3. Did all bottles arrive in good condition (unbroken)? YES NO
4. Did any VOA vials have significant air bubbles? YES NO N/A
5. Were Ice or Ice packs present? YES NO
6. Where did the bottles originate? CAS/ROC CLIENT
7. Temperature of cooler(s) upon receipt: 5°

Is the temperature within 0° - 6° C?: Yes Yes Yes Yes Yes

If No, Explain Below No No No No No

Date/Time Temperatures Taken: 11/14/02 942

Thermometer ID: 161 or IR GUN Reading From: Temp Blank or Sample Bottle

If out of Temperature, Client Approval to Run Samples _____

Cooler Breakdown: Date: 11/14/02

by: [signature]

1. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies: _____

		YES	NO	Sample I.D.	Reagent	Vol. Added
pH	Reagent					
12	NaOH					
2	HNO ₃					
2	H ₂ SO ₄					
Residual Chlorine (+/-)	for TCN & Phenol					
5-9**	P/PCBs (608 only)					

YES = All samples OK

NO = Samples were preserved at lab as listed

PC OK to adjust pH

**If pH adjustment is required, use NaOH and/or H₂SO₄

VOC Vial pH Verification (Tested after Analysis) Following Samples Exhibited pH > 2				

Other Comments:

825840177

10

Chain of Custody

Submission: R2214662 **Client:** Exponent

Lab ID: 601495 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6014951

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6014952

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 601496 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6014961

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6014962

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Lab ID: 601497 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6014971

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6014972

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214662 **Client:** Exponent

Lab ID: 601498 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6014981

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6014982

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Lab ID: 601499 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6014991

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6014992

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 601500 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6015001

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6015002

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214662 **Client:** Exponent

Lab ID: 601501 **Matrix** SOIL

Received into CAS-Rochester Custody: 11/14/02 9:30:00 A

Container: 6015011

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
11/26/02 9:27	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
11/26/02 10:50	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6015012

Date of Custody	User	Dept	Storage Location	Purpose	Empty
11/14/02 14:41	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 605311 **Matrix** SOIL

Received into CAS-Rochester Custody: 12/2/02 9:30:00 AM

Container: 6053111

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/02/02 10:07	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
12/05/02 7:21	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
12/05/02 9:04	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6053112

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/02/02 10:07	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 605312 **Matrix** SOIL

Received into CAS-Rochester Custody: 12/2/02 9:30:00 AM

Container: 6053121

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/02/02 10:07	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6053122

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/02/02 10:07	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
12/05/02 7:22	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
12/05/02 9:04	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Chain of Custody

Submission: R2214662 **Client:** Exponent

Lab ID: 606680 **Matrix** SOIL

Received into CAS-Rochester Custody: 12/6/02 9:30:00 AM

Container: 6066801

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/06/02 8:56	gesmeria	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6066802

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/06/02 8:56	gesmeria	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
12/09/02 8:47	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>

Lab ID: 607619 **Matrix** SOIL

Received into CAS-Rochester Custody: 12/11/02

Container: 6076191

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/11/02 9:49	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
12/11/02 10:14	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
12/11/02 10:51	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

Container: 6076192

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/11/02 9:49	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Lab ID: 607620 **Matrix** SOIL

Received into CAS-Rochester Custody: 12/11/02

Container: 6076201

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/11/02 9:49	hlovejoy	Sample Management	Cooler 2	Storage	<input type="checkbox"/>

Container: 6076202

Date of Custody	User	Dept	Storage Location	Purpose	Empty
12/11/02 9:49	hlovejoy	Sample Management	Cooler 3	Storage	<input type="checkbox"/>
12/11/02 10:14	dbond	Metals	Cooler 3	Analysis	<input type="checkbox"/>
12/11/02 10:51	dbond	Metals	Cooler 3	Storage	<input type="checkbox"/>

METALS DATA

METALS
COVER PAGE - INORGANIC ANALYSES DATA PACKAGEContract: R2214662SDG No.: SP0023

Lab Code:

Case No.:

SAS No.:

HOW No.: SW846 CLP-MClient: ExponentSample No.Lab Sample ID.SP0023601495SP0023D601495DSP0023S601495SSP0024601496SP0038601497SP0039601498SP0040601499SP0054601500SP0055601501SP0041605311SP0056605312SP0042606680SP0043607619SP0043D607619DSP0043S607619SSP0044607620

Were ICP interelement corrections applied?


Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NOComments: See Attached Case Narrative

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:



Name:

Michael K Perry

Date:

1/8/03

Title:

Laboratory Manager

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0023

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601495

Level (low/med): LOW

Date Received: 11/14/02

Solids: 87.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.33			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0024

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023Matrix (soil/water): SOIL/SEDIMENTLab Sample ID: 601496Level (low/med): LOWDate Received: 11/14/02

Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.05			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

18

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0038

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601497

Level (low/med): LOW

Date Received: 11/14/02

Solids: 87.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	52.6			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

19

825840186

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0039

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601498

Level (low/med): LOW

Date Received: 11/14/02

Solids: 84.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.04	U		CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

20

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0040

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601499

Level (low/med): LOW

Date Received: 11/14/02

Solids: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	172			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0054

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601500

Level (low/med): LOW

Date Received: 11/14/02

Solids: 79.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	67.1			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0055

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 601501

Level (low/med): LOW

Date Received: 11/14/02

% Solids: 82.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	162			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

825840190

23

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0041

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 605311

Level (low/med): LOW

Date Received: 12/02/02

Solids: 78.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	52.1			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0056

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 605312

Level (low/med): LOW

Date Received: 12/02/02

Solids: 80.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.04			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0042

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 606680

Level (low/med): LOW

Date Received: 12/06/02

Solids: 78.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	35.0			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0043

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 607619

Level (low/med): LOW

Date Received: 12/11/02

Solids: 83.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.75			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

SP0044

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDIMENT

Lab Sample ID: 607620

Level (low/med): LOW

Date Received: 12/11/02

Solids: 83.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	31.0			CV

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	3.0	3.07	102.3	3.0	3.08	102.7	2.78	92.7	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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27

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.10	103.3	3.12	104.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury				3.0	3.05	101.7			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

825840198

29

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662
Lab Code: Case No.: SAS No.: SDG NO.: SP0023
Initial Calibration Source: PE PURE
Continuing Calibration Source: PE PURE

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Mercury	3.0	3.04	101.3	3.0	3.03	101.0	3.06	102.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.09	103.0	3.12	104.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.10	103.3			CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	3.0	3.15	105.0	3.0	3.13	104.3	3.12	104.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code: Case No.: SAS No.: SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.19	106.3	3.18	106.0	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

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METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source:

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				3.0	3.20	106.7	3.22	107.3	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Initial Calibration Source: PE PURE

Continuing Calibration Source: PE PURE

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury	3.0	3.12	104.0	3.0	3.13	104.3	3.11	103.7	CV

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0023

CRDL Standard Source: CPI

P CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial True	Found	%R	Final Found	%R
Mercury	0.2	0.20	100.0					

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0023AA CRDL Standard Source: CPIICP CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial True	Initial Found	Initial %R	Final Found	Final %R
Mercury	0.2	0.22	110.0					

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0023

CRDL Standard Source: CPI

CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.2	0.21	105.0					

825840208

METALS

-2B-

CRDL STANDARD FOR AA AND ICP

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG No.: SP0023AA CRDL Standard Source: CPIICP CRDL Standard Source: CPI

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	Initial			Final				
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.2	0.22	110.0					

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury	0.20	U	0.20	U	0.20	U	0.20	U	0.033	U	CV

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury			0.20	U	0.20	U					CV

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury	0.20	U	0.20	U	0.20	U	0.20	U	0.033	U	CV

825840212

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METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury			0.20	U	0.20	U					CV

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Preparation Blank		
		1	2	3						
Mercury	0.20	0.20	0.20	0.20				0.033		CV

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Mercury			0.20	U	0.20	U	0.20	U			CV

METALS

-3-

BLANKS

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
	C		1	C	2	C	3	C	C		
Mercury	0.20	U	0.20	U	0.20	U			0.033	U	CV

825840216

44A

METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

SP0023S

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SED

Level (low/med): LOW

Solids for Sample: 87.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury	75 - 125	0.5389	0.3317	0.18	115.5		CV

Comments:

METALS
-5A-
SPIKE SAMPLE RECOVERY

SAMPLE NO.

SP0043S

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SED

Level (low/med): LOW

Solids for Sample: 83.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Mercury		0.9244	0.7485	0.19	94.5		CV

Comments:

METALS

-6-

DUPLICATES

SAMPLE NO.

SP0023D

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDI

Level (low/med): LOW

% Solids for Sample: 87.1

% Solids for Duplicate: 87.1

Concentration Units (ug/L or mg/kg dry weight):

MG/KG

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Mercury		0.3317	0.3203	3.5		CV

METALS
-6-
DUPLICATES

SAMPLE NO.

SP0043D

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Matrix (soil/water): SOIL/SEDI

Level (low/med): LOW

% Solids for Sample: 83.9

% Solids for Duplicate: 83.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Mercury		0.7485	0.7320	2.2		CV

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.4		0.9 2.1	94.2

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.3		0.9 2.1	86.6

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.4		0.9 2.1	93.2

METALS

-7-

LABORATORY CONTROL SAMPLE

Contract: R2214662

Lab Code:

Case No.:

SAS No.:

SDG NO.: SP0023

Solid LCS Source: ERA

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury				1.5	1.3		0.9 2.1	87.2

RECEIVED

OCT 16 2002

At Exponent

SEVERN

TRENT

SERVICES

STL Buffalo

10 Hazelwood Drive

Suite 106

Amherst, NY 14228

Tel: 716 691 2600

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www.stl-inc.com

ANALYTICAL REPORT

Job#: A02-9633

STL Project#: NY2A8971

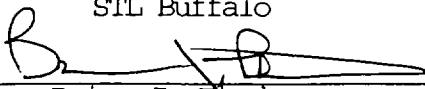
Site Name: Exponent, Inc.

Task: Exponent, Inc. - Woodridge Site

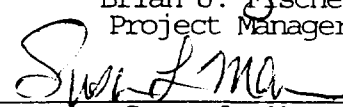
Mr. David Lamadrid
Exponent, Inc.
4000 Kruse Way, Bldg 2, Ste 285
Lake Oswego, OR 98035

CC: Elizabeth A. Henry, Ph.D.

STL Buffalo



Brian J. Fischer
Project Manager



Susan L. Mazur
Laboratory Director

10/16/2002

This report contains 167 pages which are individually numbered.

000001

SAMPLE DATA SUMMARY PACKAGE

825840226

000002

SAMPLE SUMMARY

LAB SAMPLE ID	CLIENT SAMPLE ID	SAMPLED		RECEIVED	
		DATE	TIME	DATE	TIME
A2963301	GW0301	09/24/2002	12:20	09/28/2002	09:30
A2963302	GW0302	09/24/2002	17:20	09/28/2002	09:30
A2963303	GW0303	09/25/2002	10:00	09/28/2002	09:30
A2963304	GW0304	09/25/2002	12:30	09/28/2002	09:30
A2963305	GW0305	09/25/2002	14:05	09/28/2002	09:30
A2963306	GW0306	09/25/2002	17:20	09/28/2002	09:30
A2963307	GW0307	09/25/2002	17:50	09/28/2002	09:30
A2963308	GW0308	09/26/2002	07:45	09/28/2002	09:30
A2963309	GW0309	09/26/2002	12:40	09/28/2002	09:30
A2963310	GW0310	09/26/2002	13:35	09/28/2002	09:30
A2963311	GW0311	09/26/2002	17:05	09/28/2002	09:30
A2963312	GW0312	09/26/2002	17:15	09/28/2002	09:30
A2963313	GW0313	09/26/2002	17:55	09/28/2002	09:30
A2963313MS	GW0313 MS	09/26/2002	17:55	09/28/2002	09:30
A2963313SD	GW0313 SD	09/26/2002	17:55	09/28/2002	09:30
A2963314	GW0314	09/26/2002	19:40	09/28/2002	09:30
A2963315	GW0315	09/27/2002	10:25	09/28/2002	09:30
A2963316	GW0316	09/27/2002	11:00	09/28/2002	09:30
A2963317	GW0317	09/27/2002	13:15	09/28/2002	09:30

825840227

METHODS SUMMARY

Job#: A02-9633STL Project#: NY2A8971Site Name: Exponent, Inc.

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
Arsenic - Total	SW8463 6020
Cadmium - Total	SW8463 6020
Thallium - Total	SW8463 6020

References:

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A02-9633STL Project#: NY2A8971Site Name: Exponent, Inc.General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A02-9633

Sample Cooler(s) were received at the following temperature(s); 4 °C
All samples were received in good condition.

Metals Data

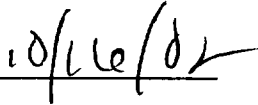
No deviations from protocol were encountered during the analytical procedures.

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and electronic deliverable has been authorized by the Laboratory Director or her designee, as verified by the following signature."



Susan L. Mazur
Laboratory Director



Date

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

- ND or U Indicates compound was analyzed for, but not detected.
- J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- C This flag applies to pesticide results where the identification has been confirmed by GC/MS.
- B This flag is used when the analyte is found in the associated blank, as well as in the sample.
- E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.
- D This flag identifies all compounds identified in an analysis at the secondary dilution factor.
- N Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.
- P This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".
- A This flag indicates that a TIC is a suspected aldol-condensation product.
- ! Indicates coelution.
- * Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

- ND or U Indicates element was analyzed for, but not detected. Report with the detection limit value.
- J or B Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.
- N Indicates spike sample recovery is not within the quality control limits.
- K Indicates the post digestion spike recovery is not within the quality control limits.
- S Indicates value determined by the Method of Standard Addition.
- M Indicates duplicate injection results exceeded quality control limits.
- W Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.
- E Indicates a value estimated or not reported due to the presence of interferences.
- H Indicates analytical holding time exceedance. The value obtained should be considered an estimate.
- * Indicates analysis is not within the quality control limits.
- + Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0301

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229954

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.230			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0302

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229955

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.210			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0303

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229956

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.010			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

INORGANIC ANALYSIS DATA SHEET

000020

SAMPLE NO.

GW0304

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229957

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	6.670			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2973			M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: YELLOW

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0305

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229958

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.820			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

000012

SAMPLE NO.

GW0306

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229959

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.520			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0307

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229960

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.250			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0308

Contract: NY02-258Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633Matrix (soil/water): WATERLab Sample ID: AD229961Level (low/med): LOWDate Received: 9/28/02Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.990			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESSClarity Before: CLEARTexture: NONEColor After: COLORLESSClarity After: CLR/FIL

Artifacts: _____

Comments: _____

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0309

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229962

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.420			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0310

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229963

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	12.2			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0311

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229964

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.550			M
7440-43-9	Cadmium	0.8312			M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0312

Contract: NY02-258Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633Matrix (soil/water): WATERLab Sample ID: AD229965Level (low/med): LOWDate Received: 9/28/02Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.330			M
7440-43-9	Cadmium	0.8508			M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESSClarity Before: CLEARTexture: NONEColor After: COLORLESSClarity After: CLR/FIL

Artifacts: _____

Comments: _____

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0313

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229966

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.890			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: YELLOW

Clarity After: CLR/FIL

Artifacts:

Comments:

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0314

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229969

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	41.5			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0315

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229970

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.900			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0316

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229971

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.830			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0317

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229972

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	10.9			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-5A-

SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313 MS

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	75 - 125	26.8151	4.8893	20.00	110		M
Cadmium	75 - 125	21.6648	0.5000 U	20.00	108		M
Thallium	75 - 125	20.5875	0.2000 U	20.00	103		M

Comments: _____

-5A-

SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313 SD

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75 - 125	25.8377		4.8893		20.00	105		M
Cadmium	75 - 125	21.4163		0.5000	U	20.00	107		M
Thallium	75 - 125	20.3189		0.2000	U	20.00	102		M

Comments:

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313A

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic		26.8794	4.8893	20.00	110.0		M
Cadmium		22.1285	0.5000 U	20.00	110.6		M
Thallium		20.6224	0.2000 U	20.00	103.1		M

Comments:

EXPONENT, INC.

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DUPLICATES

SAMPLE NO.

GW0313 SD

Contract: NY02-258

Lab Code: STLNY Case No.: SAS No.: SDG NO.: A02-9633

Matrix (soil/water): WATER Level (low/med): LOW

Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		26.8151		25.8377		3.7		M
Cadmium		21.6648		21.4163		1.2		M
Thallium		20.5875		20.3189		1.3		M

BLANKS

Contract: NY02-258Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Arsenic	1.0000	U	1.0000	U	1.0000	U	1.0000	U	1.0000	U	M
Cadmium	0.5000	U	0.5000	U	0.5000	U	0.5000	U	0.5000	U	M
Thallium	0.2000	U	0.2000	U	0.2000	U	0.2000	U	0.2000	U	M

EXPONENT, INC.

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BLANKS

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Arsenic			1.0000	U							M
Cadmium			0.5000	U							M
Thallium			0.2000	U							M

000030

SAMPLE DATA PACKAGE

825840255

SDG NARRATIVE

SAMPLE SUMMARY

<u>LAB SAMPLE ID</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED</u>		<u>RECEIVED</u>	
		<u>DATE</u>	<u>TIME</u>	<u>DATE</u>	<u>TIME</u>
A2963301	GW0301	09/24/2002	12:20	09/28/2002	09:30
A2963302	GW0302	09/24/2002	17:20	09/28/2002	09:30
A2963303	GW0303	09/25/2002	10:00	09/28/2002	09:30
A2963304	GW0304	09/25/2002	12:30	09/28/2002	09:30
A2963305	GW0305	09/25/2002	14:05	09/28/2002	09:30
A2963306	GW0306	09/25/2002	17:20	09/28/2002	09:30
A2963307	GW0307	09/25/2002	17:50	09/28/2002	09:30
A2963308	GW0308	09/26/2002	07:45	09/28/2002	09:30
A2963309	GW0309	09/26/2002	12:40	09/28/2002	09:30
A2963310	GW0310	09/26/2002	13:35	09/28/2002	09:30
A2963311	GW0311	09/26/2002	17:05	09/28/2002	09:30
A2963312	GW0312	09/26/2002	17:15	09/28/2002	09:30
A2963313	GW0313	09/26/2002	17:55	09/28/2002	09:30
A2963313MS	GW0313 MS	09/26/2002	17:55	09/28/2002	09:30
A2963313SD	GW0313 SD	09/26/2002	17:55	09/28/2002	09:30
A2963314	GW0314	09/26/2002	19:40	09/28/2002	09:30
A2963315	GW0315	09/27/2002	10:25	09/28/2002	09:30
A2963316	GW0316	09/27/2002	11:00	09/28/2002	09:30
A2963317	GW0317	09/27/2002	13:15	09/28/2002	09:30

METHODS SUMMARY

Job#: A02-9633STL Project#: NY2A8971Site Name: Exponent, Inc.

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>
Arsenic - Total	SW8463 6020
Cadmium - Total	SW8463 6020
Thallium - Total	SW8463 6020

References:

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

NON-CONFORMANCE SUMMARY

Job#: A02-9633STL Project#: NY2A8971Site Name: Exponent, Inc.General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A02-9633

Sample Cooler(s) were received at the following temperature(s); 4 °C

All samples were received in good condition.

Metals Data

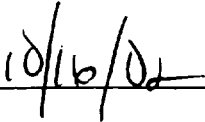
No deviations from protocol were encountered during the analytical procedures.

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and electronic deliverable has been authorized by the Laboratory Director or her designee, as verified by the following signature."



Susan L. Mazur
Laboratory Director



Date

CHAIN OF CUSTODY DOCUMENTATION

CHAIN OF CUSTODY RECORD/SAMPLE ANALYSIS REQUEST FORM

Page 1 of 1

Project: (Name and Number) <u>Wood-Ridge 8600B3N.005</u>						Exponent					
Exponent Contact: <u>Betsy Heavy</u>		Office: <u>NY</u>		Samplers: <u>Rick Jensen / Jerome Wentz</u>		Bellevue, WA (425) 643-9803 Boston, MA (781) 466-6681 Boulder, CO (303) 444-7270 Portland, OR (503) 636-4338 Washington, D.C. (301) 577-7830					
Ship to: <u>Severn Trent Laboratories</u> <u>10 Hazelwood Drive</u> <u>Amherst, NY 14228</u>		Lab Contact/Phone: <u>Brian Fisher / 716-691-2600</u>									
Sample No.	Tag No.	Date	Time	Matrix	Total As ⁺ (EPA 200.8)	Total Cd (EPA 6020)	Analyses Requested	Extra Container	Archive	Environmental Group	Remarks
GW0301	47503	24-Sep-02	1220	GW	X						Note: All samples are unfiltered.
GW0302	47506	↓	1720		X						
GW0303	47510	25-Sep-02	1000		X						
GW0304	47516		1230		X						
GW0305	47520		1405		X						
GW0306	47524		1720		X						
GW0307	47528	↓	1750		X						
GW0308	47532	26-Sep-02	0745		X						
GW0309	45738		1240		X						
GW0310	45742		1335		X						
GW0311	45746		1705		X						
GW0312	45750		1715		X						
GW0313	45754		1755		X						
↓	45755		↓					X		Please use for MS	
GW0314	45762	↓	1940		X						
GW0315	45766	27-Sep-02	1025		X						
GW0316	45770		1100		X						
GW0317	45774	↓	1315	↓	X						
Matrix Code: GW - Groundwater SL - Soil SD - Sediment SW - Surface water					Priority: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush Rush time period _____						
OTHER - Please identify codes _____					Shipped via: <input checked="" type="checkbox"/> FedEx/UPS <input type="checkbox"/> Courier Other _____						
					Condition of Samples Upon Receipt: _____				Custody Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None		

Relinquished by: [Signature] Date/Time: 27-Sep-02 1900 Received by: FedEx Date/Time: 27-Sep-02 1900

Relinquished by: _____ Date/Time: _____ Received by: [Signature] Date/Time: 07/28/02 0930

Distribution: White and Yellow Copies - Accompany Shipment; Pink Copy - Project File

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METALS DATA

EXPONENT, INC.
COVER PAGE - INORGANIC ANALYSIS DATA PACKAGEContract: NY02-258SDG No.: A02-9633Lab Code: STLNY

Case No.: _____

SAS No.: _____

HOW No.: SW8463 3RD EDSample ID.Lab Sample No.

GW0301

A2963301

GW0302

A2963302

GW0303

A2963303

GW0304

A2963304

GW0305

A2963305

GW0306

A2963306

GW0307

A2963307

GW0308

A2963308

GW0309

A2963309

GW0310

A2963310

GW0311

A2963311

GW0312

A2963312

GW0313

A2963313

GW0313 MS

A2963313S

GW0313 SD

A2963313SD

GW0314

A2963314

GW0315

A2963315

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NO

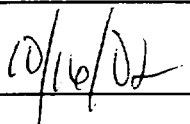
Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: Susan L. Mazur

Date: _____

Title: Laboratory Director

EXPONENT, INC.

COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

Contract: NY02-258SDG No.: A02-9633Lab Code: STLNY Case No.: _____

SAS No.: _____

OW No.: SW8463 3RD EDSample ID.Lab Sample No.GW0316A2963316GW0317A2963317

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan L. MazurName: Susan L. MazurDate: 10/16/02Title: Laboratory Director

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0301

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229954

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.230			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0302

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229955

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.210			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0303

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229956

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.010			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0304

Contract: NY02-258

Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229957

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	6.670			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2973			M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: YELLOW

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0305

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229958

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.820			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0306

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229959

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.520			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0307

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229960

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.250			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0308

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229961

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.990			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0309

Contract: NY02-258

Lab Code: STLNY Case No.: SAS No.: SDG NO.: A02-9633

Matrix (soil/water): WATER Lab Sample ID: AD229962

Level (low/med): LOW Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.420			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW Clarity Before: CLEAR Texture: NONE

Color After: COLORLESS Clarity After: CLR/FIL Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0310

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229963

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	12.2			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0311

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229964

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.550			M
7440-43-9	Cadmium	0.8312			M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0312

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229965

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.330			M
7440-43-9	Cadmium	0.8508			M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0313

Contract: NY02-258Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633Matrix (soil/water): WATERLab Sample ID: AD229966Level (low/med): LOWDate Received: 9/28/02Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	4.890			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOWClarity Before: CLEARTexture: NONEColor After: YELLOWClarity After: CLR/FIL

Artifacts: _____

Comments: _____

-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0314

Contract: NY02-258

Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229969

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	41.5			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: YELLOW

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts: _____

Comments: _____

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0315

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229970

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.900			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0316

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229971

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.830			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

GW0317

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Lab Sample ID: AD229972

Level (low/med): LOW

Date Received: 9/28/02

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	10.9			M
7440-43-9	Cadmium	0.5000	U		M
7440-28-0	Thallium	0.2000	U		M

Color Before: COLORLESS

Clarity Before: CLEAR

Texture: NONE

Color After: COLORLESS

Clarity After: CLR/FIL

Artifacts:

Comments:

EXPONENT, INC.

-2A-

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: NY02-258

Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	25	25.2	100.8	25	25.0	100.0	25.5	102.0	M
Cadmium	25	25.2	100.8	25	24.9	99.6	25.2	100.8	M
Thallium	25	24.7	98.8	25	24.7	98.8	26.3	105.2	M

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

-2A-

Contract: NY02-258

ab Code: STLNY Case No.: SAS No.: SDG NO.: A02-9633

Initial Calibration Source: _____

Continuing Calibration Source:

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)		
Arsenic				25	25.5	102.0	24.8	99.2	M	
Cadmium				25	25.2	100.8	25.1	100.4	M	
Thallium				25	25.6	102.4	27.3	109.2	M	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

EXPONENT, INC.

-3-

BLANKS

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
Arsenic	1.0000	U	1.0000	U	1.0000	U	1.0000	U	1.0000	U	M
Cadmium	0.5000	U	0.5000	U	0.5000	U	0.5000	U	0.5000	U	M
Thallium	0.2000	U	0.2000	U	0.2000	U	0.2000	U	0.2000	U	M

EXPONENT, INC.

-3-

BLANKS

Contract: NY02-258Lab Code: STLNY

Case No.: _____

SAS No.: _____

SDG NO.: A02-9633Preparation Blank Matrix (soil/water): WATERPreparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Arsenic			1.0000	U							M
Cadmium			0.5000	U							M
Thallium			0.2000	U							M

EXPONENT, INC.

-5A-

SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313 MS

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75 - 125	26.8151		4.8893		20.00	110		M
Cadmium	75 - 125	21.6648		0.5000	U	20.00	108		M
Thallium	75 - 125	20.5875		0.2000	U	20.00	103		M

Comments:

EXPONENT, INC.

-5A-

SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313 SD

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Arsenic	75 - 125	25.8377		4.8893		20.00	105		M
Cadmium	75 - 125	21.4163		0.5000	U	20.00	107		M
Thallium	75 - 125	20.3189		0.2000	U	20.00	102		M

Comments: _____

EXPONENT, INC.
-5B-

000064

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

GW0313A

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic		26.8794	4.8893	20.00	110.0		M
Cadmium		22.1285	0.5000 U	20.00	110.6		M
Thallium		20.6224	0.2000 U	20.00	103.1		M

Comments:

EXPONENT, INC.

-6-

DUPLICATES

SAMPLE NO.

GW0313 SD

Contract: NY02-258

Lab Code: STLNY

Case No.:

SAS No.:

SDG NO.: A02-9633

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids for Sample: 0.0

% Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight):

UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Arsenic		26.8151		25.8377		3.7		M
Cadmium		21.6648		21.4163		1.2		M
Thallium		20.5875		20.3189		1.3		M

LABORATORY CONTROL SAMPLE

Contract: NY02-258

Lab Code: STLNY Case No.: SAS No.: SDG NO.: A02-9633

Solid LCS Source:

Aqueous LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Arsenic	20.00	21.1545	105.8						
Cadmium	20.00	21.1043	105.5						
Thallium	20.00	21.2321	106.2						

Appendix B

Borehole Logs



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-1

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OMV (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
							Subbase	
1			1.4	0.004		SC	Clayey, fine SAND w/ fine to coarse gravel, red (2.5YR 4/6), clay 20-30%, damp.	
2		70%						
3			3.4	0.011				
4								
5			2.9	0.000		ML	SILT, olive-gray (5Y 4/2), moist. Becomes wet @ 5'.	
6		90%					Color change to yellow-brown (10YR 5/6) @ 5.7' BGS w/ olive-brown (2.5Y 5/3) mottling.	
7			1.2	0.000		CL	CLAY, brown (7.5Y 5/3) w/ slight yellow-brown (10YR 5/6) mottling, moist to wet. Color change to brown (10YR 5/3) @ 7.5' BGS w/ trace silt.	
8								
9			1.2	0.005				
10		75%				SP	Fine SAND w/ trace silt, brown (10YR 5/3), wet, increased silt with depth.	
11			1.2	0.003				
12								
13			6.7	0.003		SM	Grades to slightly silty, fine SAND, brown (10YR 5/3), silt 10-20%, wet.	
14		75%						
15			1.6	0.000				
16								
17			5.2	0.000				
18		80%				CL	CLAY, dark gray-brown (2.5Y 4/2), very firm, moist.	
19			1.6	0.003				
20							Total depth @ 20' BGS.	

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840293



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-2

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
							Subbase	
1			15.6	0.009		CL	Slightly sandy CLAY, very dark brown (7.5Y 2.5/2), damp.	
2		90%					Color change to red (2.5Y 4/6) w/ hard clay chunks.	
3			12.6	0.004		ML	SILT, olive-gray (5Y 4/2), moist to wet.	
4								
5			--	0.005		Σ	Becomes wet @ 5' BGS.	
6		80%					Color change to yellow-brown (10YR 5/6) w/ slight light olive-brown (2.5Y 5/3) mottling, wet.	BACKFILLED w/ BENTONITE GROUT
7			2.1	0.000		CL	CLAY layer, same color as above.	
8						SM/ ML	Silty fine SAND/ sandy SILT, brown (10YR 4/3) w/ some yellow-brown (10YR 5/6) mottling, wet.	
9			1.2	0.004				
10		75%						
11			2.1	0.000		ML	Clayey SILT, dark gray-brown (2.5Y 4/2), wet.	
12								
13			1.2	0.000				
14		20%				CL	Driller reports harder drilling @ 14' BGS. CLAY, dark gray (10YR 4/1), moist to wet, very firm.	
15			--	--				
16							Total depth @ 16' BGS.	
17								
18								
19								
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840294



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-3

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1				0.000		CL	Subbase	
2		95%					Sandy CLAY, fine to medium sand 10-20%, very dark brown (7.5Y 2.5/2), abundant brick, wood, gravel chunks, very minor fine grain size white flecks, damp.	
3				0.004		ML	SILT, olive-gray (5Y 4/2), moist.	
4							Color change to yellow-brown (10YR 5/6) w/ some light olive-brown (2.5Y 5/3) mottling, some black staining near color change @ 3.8' BGS.	
5				0.000				
6		70%						BACKFILLED w/ BENTONITE GROUT
7				0.000		CL	CLAY layer, same color as above.	
8						ML	Sandy SILT, fine sand 20-30%, brown (10YR 4/3), slight yellow-brown mottling (10YR 4/6), wet.	
9				0.000		SM	Silty fine SAND, silt 20-30%, gray (5Y 5/1), wet.	
10		25%						
11							CLAY layer, 1" thick.	
12								
13				0.000				
14		25%				SP	Fine to medium SAND, predominantly fine-grained, dark gray (2.5Y 4/1), uniform, wet.	
15								
16								
17			1.2	0.000		SP/ CL	Bedded SAND (beds up to 2" thick), dark gray (2.5Y 4/1) and CLAY, banded brown (7.5YR 5/3) and gray (2.5Y 5/1), wet.	
18		100%						
19			33.4	0.000				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840295



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-3

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21			13.2	0.003		SP/CL	Bedded SAND (beds up to 2" thick), dark gray (2.5Y 4/1) and CLAY, banded brown (7.5YR 5/3) and gray (2.5Y 5/1), wet.	
22		60%				CL	CLAY, dark gray (10YR 4/1), very firm, moist to wet.	BACKFILLED w/ BENTONITE GROUT
23			2.1	0.000				
24							Total depth @ 24' BGS.	
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840296



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-4

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1			1.4	0.024		ML	Sandy SILT w/ some fine gravel, red (10YR 4/6). Color change to dark brown (10YR 3/3) w/ white crystalline grains scattered through, damp to moist.	
2		100%					SILT, dark brown (10YR 3/3), quickly grades to olive-gray (5Y 5/2), moist.	
3			1.4	0.007				
4						SL	Color change to yellow-brown (10YR 5/6) w/ light olive-brown (2.5Y 5/3) mottling, wet.	
5			1.2	0.013				
6		100%						
7			0.8	0.007		SM	Silty CLAY layer, 1" thick, color as above. Silty fine SAND, yellow-brown (10YR 5/6) w/ light olive-brown (2.5Y 5/3) mottling, wet.	
8						SP	Fine to medium SAND, predominantly fine-grained, olive (5Y 5/3), wet.	
9			2.0	0.011				
10		80%					Color change to gray (5Y 5/1).	
11			6.1	0.009				
12								
13			13.8	0.010				
14		80%						
15			1.2	0.000				
16								
17			0.9	0.009				
18		30%						
19			--	--				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840297



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-4

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21			0.9	0.005		SP	Fine to medium SAND, predominantly fine-grained, gray (5Y 5/1), wet.	
22		70%				CL	CLAY, gray (2.5Y 5/1), medium to high plasticity, 1" thick sand layer, wet.	BACKFILLED w/ BENTONITE GROUT
23			1.4	0.008				
24							Total depth @ 24' BGS.	
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840298



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-5

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1			0.6	0.038		SM	Silty fine SAND w/ fine gravel, dark red-brown (5YR 2.5/2), abundant brick debris, damp to moist. As above w/ wood debris from 1.6-2' BGS.	
2		100%				ML	SILT, very dark brown (10YR 3/3), quickly grades to mottled light olive-brown (2.5Y 5/3) and olive-yellow (2.5Y 6/8), slightly micaceous, moist.	
3			0.4	0.000				
4						Σ	As above, wet.	
5		100%	0.0	0.156				
6	SP0001					SP	Fine to medium SAND, yellow-brown (10YR 5/6), wet.	
7	SP0002		2.1	0.698			⚡ Indicates sample was analyzed.	
8								
9	SP0003		1.7	0.861				
10	SP0004	100%						
11			--	0.119			Fine SAND, light olive-brown (2.5Y 5/4), minor medium grained sand, scattered thin layers (<1/2" thick) w/ trace silt, wet.	
12								
13			1.7	0.003				
14		90%						
15			0.8	0.015				
16								
17			2.8	0.026				
18		90%						
19			7.1	0.000			Fine to medium SAND, predominantly fine-grained, dark gray (2.5Y 4/1), wet.	
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840299



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-5

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21			0.4	0.010		SP	Fine to medium SAND, predominantly fine-grained, dark gray (2.5Y 4/1), wet.	
22		80%						
23			1.2	0.008				
24								
25			0.0	0.015				
26		70%				CL/CH	CLAY, gray (10YR 6/1), medium to high plasticity, wet.	
27			0.4	0.008			Sand layer, gray (10YR 6/1), 1" thick @ 27' BGS.	
28							Total depth @ 28' BGS.	
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

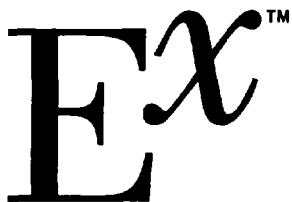
Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840300



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-6

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1			0.4	0.014		GW	Fine to coarse GRAVEL w/ trace fine silt.	
2		25%						
3			--	--		ML	SILT, mottled light olive-brown (2.5Y 5/3) and olive-yellow (2.5Y 6/8), wet.	
4								
5			0.0	0.083				
6		80%						BACKFILLED w/ BENTONITE GROUT
7			0.4	0.036		SM	Silty fine SAND, silt 10-20%, yellow-brown (10YR 5/6), wet.	
8								
9			0.4	0.103		SP	Fine to medium SAND, dark gray (5YR 4/1), wet.	
10		80%						
11			0.9	0.259		SM	Silty fine SAND, silt: 5-15%, dark gray (5YR 4/1), wet.	
12								
13			7.4	0.093		SP	Fine to medium SAND, dark gray (5YR 4/1), predominantly fine grained, few scattered thin layers (<1/4" thick) w/ trace silt, wet.	
14		50%						
15			--	--				
16								
17			--	0.044				
18		100%						
19			--	0.056				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840301



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-6

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21			0.1	0.333		SP	Fine to medium SAND, dark gray (5YR 4/1), predominantly fine-grained, few scattered thin layers (1/4" thick) w/ trace silt, wet.	
22		20%						
23			--	--				
24								
25			0.6	0.133			Grades to olive-brown (2.5Y 4/3).	
26		70%						
27			0.9	0.014		CL/CH	CLAY, gray (10YR 6/1), medium to high plasticity, wet.	
28							Total depth @ 28' BGS.	
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 8 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840302



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-7

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1			1.2	0.008			Subbase	
2		100%				CL	CLAY, reddish brown (5YR 4/3), damp to moist.	
3			2.1	0.004				
4								
5			1.0	0.006		ML	Gravelly layer from 4.8 to 5' BGS. SILT, olive-gray (5Y 4/2) w/ slight yellowish mottling, moist to wet, few rootlets at contact.	
6		100%				∇	Wet @ 6.3' BGS.	BACKFILLED w/ BENTONITE GROUT
7			1.2	0.004		CL	CLAY, color as above.	
8						SP	Fine to medium SAND, olive-brown (2.5Y 4/3), predominantly fine-grained, trace silt, wet.	
9			6.3	0.003				
10		80%						
11			37.7	0.000		SM	Increased SILT w/ depth to 5-15% (silty sand).	
12								
13			5.0	0.003		SP	Fine to medium SAND, brown (7.5YR 4/3), predominantly fine grained, few thin (<1/4" thick) clay layers of the same color, wet.	
14		75%						
15			25.8	0.000				
16							CLAY layer, 2" thick @ 16' BGS.	
17			6.3	0.003				
18		80%						
19			5.8	0.005				
20							CLAY layer, 2" thick @ 19.7' BGS.	

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840303



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-7

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20						SP	Fine to medium SAND, brown (7.5YR 4/3), predominantly fine-grained, few thin clay layers of same color (<1/4" thick), wet.	
21			4.2	0.008		CL/CH	CLAY, brown (7.5YR 4/3), medium-high plasticity, single 1/2" thick sand layer, wet.	
22		50%						BACKFILLED w/ BENTONITE GROUT
23		--	--	--				
24							Total depth @ 24' BGS.	
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840304



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-8

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1			1.6	0.046		CL	Sandy CLAY, mottled dark red-brown (5YR 3/4), dark brown (7.5YR 3/3) and black (5Y 2.5/1) w/ some fine gravel and scattered broken brick, wood "pieces" from 2.2-3' BGS, damp to moist.	
2		100%						
3			11.0	0.225			CLAY, lime green (no soil color index) w/ thin layer of paper material, clay layer, bright light tan (no soil color index), moist.	
4								
5			33.9	0.018		PT	Organic layer @ 4.7' BGS, abundant fibrous roots and rootlets, very dark red-brown (2.5Y 5/3), moist.	
6		100%				ML	Slightly fine, sandy SILT, light olive-brown (2.5Y 5/4), moist.	
7			2.1	0.026		SM	Wet @ 6.3' BGS, grades to silty fine SAND, olive-gray (5Y 4/2), (10-20% silt).	
8						CL	CLAY, mottled lt olive-brown (2.5Y 5/3) and olive-yellow (2.5Y 6/8), moist, low to medium plasticity.	
9			1.6	0.438		SP	Fine to med. SAND, yellow-brown (10YR 5/6), predominantly fine-grained, trace silt, wet.	
10		70%						
11			1.6	0.028				
12						SM	Color change to brown (10YR 4/3) @ 11.3' BGS. Grades to brown (10YR 5/3), increasing silt (to 20-30%) w/ depth (silty sand).	
13			1.6	0.009				
14		100%						
15			0.9	0.004		CL/CH	CLAY, grayish brown (10YR 5/2), few thin sand layers from 14.7-16.0 BGS, medium-high plasticity, wet.	
16								
17			1.2	0.009				
18		100%						
19			1.2	0.004				
20							Total depth @ 20' BGS.	

BACKFILLED
w/ BENTONITE
GROUT

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840305



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-9

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1	SP0005	100%	76.7	0.004		SC	Clayey SAND, fine to coarse sand, clay 20-30% very dark brown (7.5Y 2.5/2), some scattered fine gravel, damp.	
2						CL	CLAY, dark brown (7.5YR 3/2), trace fine sand, some fine gravel and brick, damp.	
3	SP0006	20%	25.8	0.000		ML	Clayey SILT, brown (10YR 4/3), moist. X indicates sample was analyzed.	
4						OL	CLAY, black (10YR 2/1), moist, organic odor.	
5	SP0007	100%	6.3	0.000		ML	SILT, olive-gray (5Y 4/2), moist.	
6								BACKFILLED w/ BENTONITE GROUT
7	SP0008	10%	60.0	0.000				
8								
9	SP0009	100%	6.3	0.000		SM	Silty fine SAND, yellow-brown (10YR 5/6), silt 10-20%, wet.	
10								
11	SP0010	20%	2.5	0.000		SP/CL	Bedded fine to medium SAND, yellow-brown (10YR 5/6) and clay, yellow-brown (10YR 5/6), wet, beds up to 4" thick.	
12								
13	SP0011	100%	1.2	0.000				
14								
15		0%				CL	CLAY, yellow-brown, moist, firm.	
16								
17	SP0012	100%	1.2	0.000		CL/CH	CLAY, grayish brown (2.5Y 5/2), medium to high plasticity, few (2-1/4" thick) sand layers, wet.	
18								
19								
20							Total depth @ 20' BGS.	

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840306



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-10

Ground surface: Level asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
1	SP0013 SP0014*	100%	2.1	0.000		CL	Subbase Sandy CLAY, red (2.5YR 4/6) w/ fine gravel, sand 10-20%, minor wood debris, damp. X Indicates sample was analyzed.	
2								
3		5%	25.8	0.000				
4							Becomes wet @ 4' BGS.	
5	SP0015	100%	1.2	0.000		SC	Clayey, fine to coarse SAND, gray (10YR 4/1), abundant glass and white clayey material, wet.	BACKFILLED w/ BENTONITE GROUT
6						OL	CLAY (2" thick), black (10YR 2/1), organic odor.	
7		0%	--	--		ML	SILT, olive-gray (5Y 4/2), wet.	
8								
9	SP0016	100%	2.1	0.000			Fine sandy SILT, yellow-brown (10YR 5/6) and grayish brown (2.5Y 5/2), sand 10-20%, wet.	
10								
11	SP0017	80%	2.1	0.000		CL/ CH	CLAY, grayish-brown (2.5Y 5/2), medium-high plasticity, wet.	
12							Total depth @ 12' BGS. * Indicates duplicate sample	
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 9 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840307



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-11

Ground surface: Soil

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0								
1	SP0018	100%		0.008		ML	Clayey SILT, dark olive-brown (2.5Y 3/3), some root fragments, minor asphalt from 0.7-0.9' BGS. damp to moist.	
2						CL	CLAY, red (7.5YR 3/3), hard solid clay chunks, damp to moist.	
3		5%					Indicates sample was analyzed.	
4								
5	SP0019	100%		0.004		ML	Clayey SILT, very dark gray-brown (10YR 3/2), moist.	
6							SILT @ 5.5' BGS, olive-gray (5Y 4/2), moist.	
7	SP0020	80%		0.000		Σ	Color change to yellow-brown (10YR 5/6) w/ faint grayish brown (2.5Y 5/2) mottling. Wet @ 6.8' BGS.	
8								
9	SP0021	100%		0.003			Some black iron oxide staining from 8.7-9.2' BGS.	
10						SP	Fine to medium SAND, predominantly fine-grained, trace fines, wet. Color change to grayish brown @ 10' BGS.	
11	SP0022	100%		0.003		CL	CLAY, dark gray-brown (2.5Y 4/2), wet.	
12							Total depth @ 12' BGS.	
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 10 October 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 1

825840308



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-12

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
							Subbase	
1	SP0023	100%		0.000		CL	Sandy CLAY, red (2.5YR 4/6), fine sand 5-15%, few fine gravels, moist. ▲ Indicates sample was analyzed.	
2								
3		0%						
4						ML	SILT, dark brown (7.5YR 3/2), moist to wet.	
5	SP0024	100%		0.000		CL	Color change to yellow-brown (10YR 5/6) w/ some slight olive-brown (2.5Y 5/3) mottling, moist to wet. Wet @ 4.7' BGS.	
6								BACKFILLED w/ BENTONITE GROUT
7	SP0025	90%		0.000			As above, becomes clayey SILT @ 7.4' BGS.	
8								
9	SP0026	100%		0.000		SM	Silty fine SAND, yellow-brown (10YR 5/6), silt 10-20%, increasing silt w/ depth, wet.	
10						CL	Grades to silty CLAY, dark gray-brown (10YR 3/2), wet.	
11	SP0027	80%		0.000		SP	Very fine to fine SAND, dark gray (2.5Y 4/1), wet.	
12								
13	SP0028	100%		0.000			As above w/ scattered clay layers (1/8-1/4" thick), gray (2.5Y 4/1).	
14								
15	SP0029	30%		0.000				
16							Clay layers increase in number and thickness (up to 4" thick), clay is mottled gray (2.5Y 4/1) and brown (7.5YR 5/3), medium to high plasticity.	
17	SP0030	100%		0.000				
18								
19	SP0031	70%		0.000				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840309



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-12

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21	SP0032	100%		0.000		SP	Very fine to fine SAND, dark gray (2.5Y 4/1), uniform, wet w/ clay layers (up to 4" thick), clay is mottled gray (2.5Y 4/1) and brown (7.5YR 5/3), medium to high plasticity.	
22								
23	SP0033	100%		0.000				
24								
25	SP0034	100%		0.000				
26								
27	SP0035	20%		0.000				
28								
29	SP0036	100%		0.000		SP/ CL	As above w/ roughly equal percentage sand and clay beds (up to 6" thick), clay primarily brown w/ gray mottling.	
30								
31	SP0037	20%		0.000				
32								
33						CL	Grades to CLAY w/ sand (as above) layers up to 2" thick.	
34								
35								
36								
37								
38								
39								
40							Total depth @ 40' BGS.	

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840310



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-13

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete	
							Subbase	
1	SP0038	100%		0.003		CL	Slightly sandy CLAY, red (2.5YR 4/6), fine sand 5-15%, damp to moist, some hard concretions, increased moisture with depth.	
2							⚡ Indicates sample was analyzed.	
3	SP0039	60%		0.000				
4								
5	SP0040	100%		0.000				
6						ML	Slightly clayey SILT, dark brown (7.5YR 3/2), black at contact (approx. 2" thick), moist to wet.	
7	SP0041	100%		0.017			Wet @ 6.3' BGS. SILT yellow-brown (10YR 5/6) with slight olive-brown (2.5Y 5/3) mottling, some iron-oxide flecks, wet.	
8								
9	SP0042	100%		0.000				
10								
11	SP0043	70%		0.000		CL	Silty CLAY, same color as above.	
12						SP	Very fine to fine SAND, yellow-brown (10YR 5/6), wet.	
13	SP0044	100%		0.215			Color change to light olive-brown (2.5Y 5/4), few thin (1/4" thick) scattered sand layers with trace fines.	
14								
15	SP0045	70%		0.082				
16								
17	SP0046	100%		0.110				
18								
19	SP0047	30%		0.094				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840311



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-13

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OVM (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21	SP0048	70%		0.092		SP	Very fine to fine SAND, light olive-brown (2.5Y 5/4), few thin (1/4" thick) scattered layers with trace fines.	
22								
23		0%		--				
24								
25	SP0049	100%		0.023				
26								
27	SP0050	80%		0.000				
28								
29	SP0051	100%		0.110				
30						CL/CH	CLAY, gray (2.5Y 4/1), medium high plasticity, wet.	
31	SP0052	30%		0.000		SP	Fine to medium SAND, dark gray (5YR 4/1), predominantly fine-grained, wet.	
32								
33	SP0053	100%		0.081		CL/CH	CLAY, gray (10YR 6/1), medium high plasticity, wet.	
34								
35		5%		--				
36							Total depth @ 36' BGS.	
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840312



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-14

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OMV (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0							Asphaltic concrete Subbase	
1	SP0054	75%		0.004		CL	Sandy CLAY, dark red-brown (5YR 2.5/2), fine sand 10-20%, some fine gravel, few hard concretions, moist. ▲ Indicates sample was analyzed.	
2								
3		0%		--				
4								
5	SP0055	100%		0.005		ML	Silt layer 1.5" thick at contact, dark brown (7.5YR 3/2), some organic matter (rootlets), moist to wet. Color change to yellow-brown (10YR 5/6) @ 4.9' BGS w/ some olive-brown (2.5Y 5/3) mottling, some iron-oxide flecks. Wet @ 6' BGS.	
6								
7	SP0056	20%		0.000				
8								
9	SP0057	100%		0.000				
10						CL	Silty CLAY, same appearance as above.	
11	SP0058	100%		0.000		SP	Very fine to fine SAND, yellow-brown (10YR 5/6), wet.	
12								
13	SP0059	100%		0.000			Occasional thin clay layers (< 1/4" thick), dark gray (5YR 4/1).	
14								
15	SP0060	30%		0.000				
16								
17	SP0061	100%		0.003			Color change to dark gray (2.5Y 4/1).	
18								
19	SP0062	20%		0.000				
20								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 1 of 2

825840313



Project No: 8600B3N.005.0402

Project: Ventron/Velsicol Site

Client: Rohm and Haas

Location: Wood-Ridge/Carlstadt, NJ

Borehole : B-14

Ground surface: Asphaltic concrete

Geologist: David Lamadrid, R.G.

DEPTH (Feet)	SAMPLE NUMBER	% RECOVERY	OMV (ppm)	Hg Vapor (mg/m ³)	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21	SP0063	100%		0.191		SP	Very fine to fine SAND, dark gray-brown (2.5Y 4/2) w/ occasional thin clay layers (< 1/4" thick), wet.	
22								
23	SP0064	40%		0.068				
24								
25	SP0065	100%		0.043				
26								
27	SP0066	20%		0.008				
28								
29	SP0067	80%		0.008				
30								
31		0%		--				
32								
33	SP0068	100%		0.010		CL/CH	CLAY, gray (10YR 6/1), medium high plasticity, wet.	
34								
35		20%		--				
36							Total depth @ 36' BGS.	
37								
38								
39								
40								

Drilled By: Summit Drilling

Drill Method: Push probe

Drill Date: 13 November 2002

Well Casing Elevation: NA

Ground Surface Elevation: NA

Borehole Diameter: 2.0"

Datum: NA

Sheet: 2 of 2

825840314

Appendix C

Quality Assurance Review

Quality Assurance Review

Introduction

A quality assurance review was completed by Exponent for total solids and metals analyses on groundwater and soil samples collected during the Phase 1A supplemental field investigation (SFI) at the Ventron/Velsicol site located in Wood-Ridge and Carlstadt, New Jersey. Groundwater samples were collected from September 24–27, 2002 and soil samples were collected from October 8–10, 2002 and November 13, 2002. Overall, the data reported are of good quality. A total of 4 results were qualified as estimated (*J*) and 17 results were restated as undetected (*U*). No results were rejected (*R*). The quality assurance review was conducted to verify that the laboratory quality assurance and quality control procedures were documented and that the quality of the data is sufficient to support the use of the data for their intended purposes. The quality assurance review included evaluating the applicable quality control results reported by the laboratory. The data validation procedures, the analytical methods used to complete the analyses, and the results of the quality assurance review are presented below.

Data Validation Procedures

Data validation procedures included evaluating the sample results and applicable quality control results reported by the laboratory. The data were subjected to an abbreviated data validation review using guidelines specified by the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (U.S. EPA 1994). For the abbreviated validation, the following laboratory deliverables were reviewed:

- Case narratives discussing analytical problems (if any) and procedures
- Chain-of-custody documentation to verify completeness of data
- Sample preparation logs or laboratory summary result forms to verify analytical holding time constraints were met
- Initial and continuing calibration results to assess instrument performance
- Method blank, continuing calibration blank, and equipment rinsate blank results to determine whether an analyte reported as detected in any sample was the result of possible contamination at the laboratory or contamination during field sampling
- Laboratory control sample (LCS) analyses (i.e., blank spikes) and matrix spike (MS) analyses to assess analytical accuracy

- Laboratory duplicate sample, matrix spike duplicate (MSD), and/or duplicate LCS results, as applicable, to assess analytical precision
- Analytical results for analyses performed.

The abbreviated data validation included review of the summary of quality control results reported by the laboratory. Ten percent of the laboratory data reported was verified (e.g., calculations and transcriptions and review of instrument printouts and bench sheets). The laboratory case narratives did not indicate any significant problems with data that were not reviewed. In addition, results for applicable field duplicate samples were evaluated to provide additional information in support of the quality assurance review.

Data qualifiers were assigned during the quality assurance reviews if applicable control limits were not met, in accordance with functional guidelines (U.S. EPA 1994) and the quality control requirements stated in the methods.

Analytical Methods

Analyses were completed according to the following procedures:

- Unfiltered barium, copper, iron, lead, manganese, nickel, and vanadium in 16 groundwater samples and one equipment rinsate blank by inductively coupled plasma-atomic emission spectrometry using U.S. EPA SW-846 Method 6010B (U.S. EPA 1997). Analyses were performed by Columbia Analytical Services, Inc., Rochester, New York.
- Unfiltered arsenic, cadmium, and thallium in 16 groundwater samples and one equipment rinsate blank by inductively coupled plasma-mass spectrometry using U.S. EPA SW-846 Method 6020 (U.S. EPA 1997). Analyses were performed by Severn Trent Services, Inc., Amherst, New York.
- Unfiltered and filtered mercury in 16 groundwater samples and one equipment rinsate blank by cold vapor atomic fluorescence spectrometry using EPA Method 1631C (U.S. EPA 2001). Analyses were performed by Cebam Analytical, Inc., Seattle, Washington.
- Total mercury in 26 soil samples by cold vapor atomic absorption spectrometry using U.S. EPA SW-846 Method 7471A (U.S. EPA 1997) and total mercury on one equipment rinsate blank using U.S. EPA SW-846 Method 7470A (U.S. EPA 1997). In addition, all soil samples were analyzed for total solids using EPA Method 160.0 (U.S. EPA 1983). Analyses were performed by Columbia Analytical Services, Inc., Rochester, New York.

Data Quality Assessment

The laboratory data were evaluated in terms of completeness, holding times, instrument performance, bias, and precision. The results of the quality control procedures used during sample analyses are discussed below.

Completeness

Results reported by the laboratory were 100-percent complete.

Holding Times and Sample Preservation

All analytical holding time constraints and sample preservation requirements were met for all samples.

Calibration

The calibration of the analytical instruments, as documented by the laboratory, was acceptable. No changes in instrument performance that would have resulted in the degradation of data quality were indicated during any analytical sequence.

Initial and Continuing Calibration

Initial and continuing calibrations, as documented by the laboratory, were completed for all applicable target analytes and met the criteria for acceptable performance (Table 1) and frequency of analysis.

Initial and Continuing Calibration Blanks

The initial and continuing calibration blank analyses, as documented by the laboratory, met the criteria for acceptable performance (Table 1).

Laboratory Method Blank Analyses

No target analytes were detected in the laboratory method (e.g., preparation) blanks and met the criteria for acceptable performance (Table 1).

Accuracy

The accuracy of the analytical results is evaluated in the following sections in terms of analytical bias (MS/MSD and LCS recoveries) and precision (duplicate sample analyses and/or MSD analyses).

Matrix Spike Recoveries

The recoveries reported by the laboratory for MS/MSD analyses, and the frequency of analysis, met the criteria for acceptable performance (Table 1).

Laboratory Control Sample Recoveries

The recoveries reported by the laboratory for all LCS recoveries, and the frequency of analysis, met the criteria for acceptable performance (Table 1).

Precision

Results for all duplicate sample and/or MS/MSD analyses, and the frequency of analysis, met the criteria for acceptable performance (Table 1).

Field Quality Control Samples

Field quality control samples consisted of one set of field duplicate samples and an equipment rinsate blank for each sampling event, with the exception of samples collected on November 13, 2002. The results of the field quality control samples are discussed below.

Field Duplicate Samples

For the field duplicate sample analyses, the precision of all target analytes reported as detected was generally acceptable. The relative percent difference for mercury in the groundwater field duplicate pair and the soil field duplicate pair was above the 35 percent validation control limit. The following action was taken:

- Results reported for dissolved mercury in the groundwater samples GW0311 and GW0312 were qualified as estimated (assigned a *J* qualifier)
- Results reported for mercury in the soil samples SP0013 and SP0014 were qualified as estimated (assigned a *J* qualifier).

These qualified data may exhibit a greater degree of uncertainty than unqualified data.

Equipment Rinsate Blanks

No target analytes were reported as detected in the equipment rinsate blanks, with two exceptions. Total arsenic and dissolved mercury were reported as detected in the equipment rinsate blanks. The following actions were taken:

- Thirteen groundwater results reported for total arsenic were restated as undetected (a *U* qualifier was assigned to the concentration reported)
- Four groundwater results reported for dissolved mercury were restated as undetected (a *U* qualifier was assigned to the concentration reported).

Table 1. Acceptable performance^a

	EPA SW-846 6010B ^b (ICP-AES)	EPA SW-846 6020 ^b (ICP-MS)	EPA Method 1631C ^c (CVAFS)	EPA SW-846 7470A/7471A ^c (CVAA)
Initial Calibration	90–110 %R	90–110 %R	80–120%	80–120%
Continuing Calibration	90–110 %R	90–110 %R	80–120%	80–120%
Initial and Continuing Calibration Blanks	<IDL	<IDL	<IDL	<IDL
Laboratory Method Blanks	<IDL	<IDL	<IDL	<IDL
Matrix Spike Recoveries	75–125 %R	75–125 %R	75–125 %R	75–125 %R
Laboratory Control Samples	80–120 %R	80–120 %R	80–120 %R	80–120 %R
Precision	±25 RPD	±25 RPD	±25 RPD	±25 RPD

Note: CVAA - cold vapor atomic absorption
CVAFS - cold vapor atomic fluorescence spectrometry
EPA - U.S. Environmental Protection Agency
ICP-AES - inductively coupled plasma-atomic emission spectrometry
ICP/MS - inductively coupled plasma-mass spectrometry
IDL - instrument detection limit
%R - percent recovery
RPD - relative percent difference

^a Criteria listed below were used for validation purposes only.

^b U.S. EPA 1997.

^c U.S. EPA 2001.

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